REMEDIATION IMPLEMENTATION AND POST-REMEDIATION MONITORING REPORT

OCTOBER 2013 THROUGH MAY 2014

ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION BUILDING #1
410 EMBRY DRIVE
LEITCHFIELD, KENTUCKY

AGENCY INTEREST # 1579

Submitted to:

Kentucky Department for Environmental Protection

Division of Waste Management
Superfund Branch

Prepared by:

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AMEC Project 6251-12-1002

November 7, 2014

November 7, 2014

Mr. Christopher Jung, P.G.
Superfund Branch
Division of Waste Management
200 Fair Oaks Lane
Frankfort, Kentucky 40601

Subject: **Remediation Implementation and Post-Remediation Monitoring Report – October 2013 through May 2014**
Robert Bosch Tool Corporation
Leitchfield Division Building #1
410 Embry Drive, Leitchfield, Grayson County, Kentucky
Agency Interest # 1579
AMEC Project 6251-12-1002

Dear Mr. Jung:

On behalf of Robert Bosch Tool Corporation (RBTC), AMEC Environment and Infrastructure, Inc. (AMEC) is pleased to submit this *Remediation Implementation and Post-Remediation Monitoring Report* for the subject property. This report has been prepared as discussed in AMEC's report titled *Additional Investigation and Remediation Activities, April 2013 through August 2013 Robert Bosch Tool Corporation, Leitchfield Division Building #1, 410 Embry Drive, Leitchfield, Grayson County, Kentucky,* dated November 12, 2013.

Should you have any questions, please do not hesitate to contact the undersigned.

Sincerely,

AMEC Environment & Infrastructure, Inc.

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1.0 INTRODUCTION

This Remediation Implementation and Post-Remediation Monitoring Report has been prepared by AMEC Environment & Infrastructure, Inc. (AMEC) at the request of Robert Bosch Tool Corporation (RBTC) for the RBTC Leitchfield Division Building #1 facility (LDB #1) in Leitchfield, Kentucky (**Figure 1**). Investigation activities have been conducted at the site since late 2003; remedial activities have been conducted concurrently with additional investigations since 2010. Investigation and remedial activities have focused on chlorinated volatile organic compounds (CVOCs) in groundwater.

The subject property consists of a tract of land approximately seven acres in size, developed with an 86,000 square foot former manufacturing facility and associated outbuildings. The property is located north of downtown Leitchfield at 410 Embry Drive, approximately 800 feet west-southwest of the intersection of Embry Drive and Salt River Road in Leitchfield, Grayson County, Kentucky. RBTC sold the property to Lots LLC, owned by Mr. Marty Higdon, in late 2010. The property is currently used primarily for warehousing, and a small retail electronics store is located in the front of the building on the northeast corner. The site location is shown on the topographic map in **Figure 1**. The site vicinity is shown on the aerial photograph in **Figure 2**.

AMEC submitted a report on November 12, 2013 that summarized activities conducted during the first part of 2013 (April through August). The report was titled *Additional Investigation and Remediation Activities, April 2013 through August 2013, Robert Bosch Tool Corporation, Leitchfield Division Building #1, Leitchfield, Grayson County, Kentucky*. It included the results of monitoring well installation activities (June 2013, MW-29 through MW-31), groundwater monitoring conducted in June 2013, and remediation activities (pit and impacted soil removal) conducted in the former wastewater treatment room (WWTR). The report included recommendations for additional sampling and remediation activities to be conducted for the remainder of 2013.

The following report summarizes planning and field activities conducted between October 2013 and May 2014, which included the following tasks:

- Limited interim groundwater sampling of selected wells in October 2013 and January 2014.
- Submittal of an Underground Injection Control (UIC) permit request (*Request for Rule Authorization for Injection of BOS 100® and 3-D Microemulsion*) in November 2013 to the United States Environmental Protection Agency (USEPA), Region 4, Ground Water/UIC Section, for approval to install Geoprobe® direct-push borings and long term reinjection wells as Class V injection wells. The UIC request was approved by the USEPA in December 2013.
- Pre-injection water level survey (December 3, 2013).

- On December 10, 2013 and January 7, 2014, installation of four shallow zone remediation test wells (TW-16, TW-17, TW-18, TW-19), two wells associated with a sodium bicarbonate pilot test conducted near MW-8 (TW-16 and TW-17) and two wells (TW-18 and TW-19) associated with areas to be monitored south of the former WWTR.

- Pilot testing of remedial amendments including:
  - On December 10, 2013, use of sodium bicarbonate near MW-8 to test the added effectiveness of maintaining anaerobic dechlorinating conditions within the optimal pH range,
  - On January 24, 2014, use of Regenesis Oxygen Releasing Compound® (ORC) in a filter sock near MW-14 to test for effectiveness of increasing the dissolved oxygen (DO) of the formation to increase aerobic degradation of vinyl chloride, and,
  - On February 3, 2014, use of Dehalococcoides bacteria (DHC) near MW-13 to test the effectiveness of increasing the bacterial population (bioaugmentation) for treatment in the plume area.

- Injections of Trap and Treat BOS 100® (BOS 100) in the source area and Regenesis 3D Microemulsion™ – Factory Emulsified (3DMe) in the plume area through new and existing injection points.

- Post injection monitoring conducted from February 2014 through May 2014, which included field parameter monitoring and one comprehensive round of groundwater monitoring in May 2014.

Section 2.0 describes the field activities performed from October 2013 through February 2014. **Section 3.0** discusses post-remediation groundwater monitoring activities. **Section 4.0** presents remediation implementation and groundwater monitoring results. **Section 5.0** presents conclusions and recommendations. **Section 6.0** provides qualifications to the content of this report.

2.0 FIELD ACTIVITIES

Monitoring well locations are shown on **Figure 3**. A well construction summary table for permanent monitoring wells and former water supply wells is included as **Table 1**. A well construction summary table for remediation test wells and sentinel wells is included as **Table 2**. The following sections describe the field activities performed by AMEC from October 2013 through May 2014.

2.1 OCTOBER 2013 LIMITED GROUNDWATER SAMPLING

Prior to completion of the previous report (*Additional Investigation and Remediation Activities, April 2013 through August 2013*, dated November 2013) and while preparing recommendations regarding additional injections, AMEC performed limited groundwater sampling of selected wells in key areas to determine locations for additional injections of 3DMe. On October 7, 2013, AMEC personnel performed low-flow sampling of seven monitoring wells and two sentinel wells (MW-5, MW-8, MW-13, MW-17, MW-21, MW-22, MW-23, SW-3 and SW-4). Groundwater levels were gauged in these wells prior to well purging. Low-flow sampling methods were used to the extent practical for well purging and sample collection. Sentinel well SW-3 purged dry very quickly and did not recover for sample collection. During well purging, field parameter readings were collected from each well, including temperature, pH, specific conductance (SC), oxygen reduction potential (ORP), DO, and turbidity.

All samples were maintained chilled in a cooler on ice, and shipped for analysis to ESC Lab Sciences (ESC) in Mt. Juliet, Tennessee. All groundwater samples were analyzed for volatile organic compounds (VOCs) by USEPA Method 8260B and Total Organic Carbon (TOC) by USEPA Method 9060A. Water level measurements are summarized on **Table 3** and field parameter readings are included on **Table 4** (final reading only). The laboratory report is provided in **Appendix A**.

2.2 REMEDIAL INJECTION ACTIVITIES SUMMARY

From December 3, 2013 through February 7, 2014, AMEC and its subcontractor AST Environmental, Inc. (AST) implemented a second round of injections to continue implementation of the two selected primary remedial technologies. The two primary technologies selected for remediation of the shallow groundwater zone are:

- Adsorption of the chlorinated organic compounds followed by iron-catalyzed abiotic reductive dechlorination, using BOS 100 in the Source Area; and,
- Biostimulation of naturally-occurring bacteria by injection of 3DMe in the secondary source areas and the surrounding less concentrated plume areas, to promote biologically-facilitated breakdown of the CVOCs by reductive dechlorination.

Prior to remedial activities, water level gauging was performed in all onsite and nearby wells on December 3, 2013, using an electronic water level indicator (WLI) to measure the depth to water from the top of the well casing in each well. The WLI was decontaminated with a solution of Alconox® and store-bought distilled water, and rinsed thoroughly with distilled water between each well.

As part of the second round of injections, some variations on the primary technologies were implemented, as described in more detail below. The following major activities were performed:

- Installation of two remediation test wells, TW-16 and TW-17, between MW-8M and permanent biostimulation injection point F12P, and implementation of a pilot test at MW-8 using 3DMe and sodium bicarbonate in injection point F12P.
- Installation of eight new permanent biostimulation injection points, and injection of 318 gallons of concentrated 3DMe and approximately 15 pounds of sodium bicarbonate in those points.
- Injection of 105 gallons of 3DMe and 270 pounds of sodium bicarbonate in 42 existing permanent injection wells.
- Injection of 4,820 pounds of BOS 100 into 72 new direct push technology (DPT) borings.
- Installation of a new monitoring well, MW-32, directly south of MW-14, and placement of a filter sock containing ORC in MW-32.
- Introduction of DHC bacteria in permanent biostimulation injection points G2P and G4P, for bioaugmentation.
- Installation of two remediation test wells south of the WWTR, TW-18 and TW-19, in order to fill holes in the groundwater monitoring well network.
- Survey of new wells and field parameter/groundwater monitoring throughout the process.

Photographs from the injection activities are provided in **Appendix B**. The following sections describe major activities associated with the additional injections.

2.3 HEALTH AND SAFETY MONITORING

An updated project-specific Health and Safety Plan (HASP) was prepared for the project to address specific job hazards and work procedures required during remediation implementation and groundwater monitoring activities. The HASP included chemical and material handling, remediation drilling techniques, amendment injection procedures, and spill response and emergency procedures. The HASP was developed in accordance with Occupational Safety and Health Administration (OSHA) requirements (29 CFR 1910.120)

and was reviewed and signed by all individuals (AMEC personnel and other) present at the site for the purpose of remediation and monitoring activities.

Level D personnel protective equipment (hard hat, safety glasses, gloves, steel toed boots, etc.) was used at all the times by AMEC and AST personnel. Tyvek® suits were used by AST personnel during handling of BOS 100 and 3DMe products. In addition, a MultiRae 10.6eV multigas detection meter was used to monitor levels of oxygen (O_2), carbon monoxide (CO), VOCs and presence of combustible gases relative to the lower explosive limit (LEL) during remedial activities. The meter was calibrated daily prior to commencement of work. A fresh air calibration was performed on the meter initially and then it was calibrated with 100 parts per million (ppm) isobutylene for VOCs using single sensor calibration. The meter was then calibrated for $CO/H_2S/LEL/O_2$ with mixed calibration gas containing: 10 ppm CO, 50 ppm H_2S, 2.5 percent (%) Methane (50% LEL), 18% O_2 and Nitrogen (balance).

During remedial activities, H_2S and combustible gases (LEL) were not detected on the multigas detection meter. CO was detected during the injections and was in the range of 1 to 48 ppm. The elevated CO readings were observed while using the forklift to move equipment and pallets of materials during remedial activities. Field personnel were evacuated from the area when elevated CO readings were detected. VOCs were generally not detected, except for low levels of VOCs on a few occasions, in the range of 0.1 to 0.9 ppm, interpreted to be caused by the spray paint used to mark injection locations. Elevated VOC readings were detected on January 8, 2014, between 1.1 and 3.5 ppm, while injecting BOS 100 in injection Zone 2. A Draeger pump was used with a vinyl chloride detection tube and with 5 strokes the detection tube measured between 0.5 and 1.0 ppm. The area was immediately evacuated and monitored with the multigas meter. Supplementary ventilation was provided with industrial fans when additional injection work was performed in the room at later dates.

2.4 BIOSTIMULATION – 3DME AND SODIUM BICARBONATE

The main 3DMe injections were conducted in two phases from December 11 through December 13, 2013, and from January 21 through February 7, 2014. A total of 3,200 pounds (lbs), or approximately 384 gallons, of 3DMe concentrate was delivered to the site on December 4, 2014 in eight 55-gallon polyvinyl chloride (PVC) drums, each drum containing 400 lbs (approximately 48 gallons) of concentrate. A total of 400 pounds (48 gallons) of 3DMe concentrate was delivered to the site on January 31, 2014 in one 55-gallon PVC drum. Sodium bicarbonate was purchased from a pool supply company in Elizabethtown, Kentucky.

3DMe was delivered onsite as an amber colored semi-viscous liquid concentrate. 3DMe was diluted in the field by adding water to form an easy to handle and pumpable microemulsion with a relatively high hydrophilic/lipophilic balance (HLB.) This high HLB allows dilute 3DMe suspensions to be well-distributed within contaminant plumes. After

field emulsification, the material becomes a less viscous, watery, cream-colored microemulsion.

During field emulsification, a specific pre-calculated volume of the 3DMe concentrate was added to the water in a recirculating mixer tank to prepare the injectate. Sodium bicarbonate was also added in a pre-calculated volume to the mix tank. A high-pressure liquid ring pump was used to pump the 3DMe injectate through an injection head attached to a direct push drilling rod. The following sections describe both types of injections, those completed in newly drilled and installed injection wells, and those completed into existing onsite wells installed in late 2012 as part of the first round of remedial injections.

2.4.1 MW-8 Pilot Test for pH

In order to test the added effectiveness of maintaining anaerobic dechlorinating conditions within the optimal pH range, AMEC performed a pilot test in the vicinity of MW-8. The purpose was to test the effectiveness of introducing additional biostimulation amendments supplemented with a pH adjustor (sodium bicarbonate). On December 10, 2013, AMEC began the pilot test by installing two remediation test wells at the locations shown on **Figure 3** between MW-8M and permanent biostimulation injection point F12P. These wells, referred to as TW-16 and TW-17, were installed using DPT drilling methods to probe refusal. The two new remediation test wells were constructed of 3/4-inch diameter, Schedule 40 PVC, flush-threaded well casing and manufactured well screen with 0.010-inch machined slots. The wells were constructed with ten feet of screen. A washed sand filter pack was placed around each well screen from the bottom of the boring to approximately two feet above the top of the well screen. A minimum two-foot thick bentonite seal (consisting of hydrated bentonite chips) was placed above the washed sand filter pack, and concrete was placed at the top, above the bentonite seal. The wells were finished with 4-inch diameter bolting manhole covers set in concrete pads flush with the ground surface. Well logs are included in **Appendix C**.

After installation, approximately 201 gallons of a mixture of 3DMe and sodium bicarbonate was placed in permanent injection well F12P (one gallon 3DMe concentrate, seven pounds sodium bicarbonate and 200 gallons of water). The location of F12P (row F, permanent injection well 12P) is depicted on **Figure 4**. Temperature, pH and SC readings were collected from TW-16, TW-17 and MW-8 prior to and right after injection of the 3DMe/sodium bicarbonate mixture. Prior to injection, the pH ranged from 6.44 standard units (s.u.) in TW-17 to 6.73 s.u. in TW-16. SC readings ranged from 0.47 milliSiemens per centimeter (mS/cm) in TW-16 to 1.03 mS/cm in MW-8. Post injection (same day), the pH increased most significantly in TW-17, the closest well to F12P, from 6.44 s.u. to 7.56 s.u. In addition, SC increased most significantly in TW-17 from 0.75 mS/cm to 2.51 mS/cm and 3DMe was visible in the well. By two days after the injection, the pH levels had returned to pre-injection levels in all three monitoring wells, though temperature and SC were still elevated compared to baseline. Based on the results of the pilot test, AMEC

adjusted the amount of sodium bicarbonate originally planned for injection. In most cases, the quantity was doubled above the original planned injection quantity.

2.4.2 New Injection Wells

On December 12 and 13, 2013, a total of eight new soil borings and permanent injection wells were advanced and installed via DPT using a track mounted Geoprobe® 7720DT rig (exterior locations) and a track mounted Geoprobe® 54LT rig (interior locations), equipped with 1.5-inch to 2.5-inch drill rods, to perform 3DMe injections. The new injection points were installed on row F (F35P, F36P, F37P and F38P), row D (D30P, D31P and D32P) and row C (C23P). Locations of the newly installed points are shown on **Figure 4**. A detailed summary of the injection dates and volumes for each 3DMe boring is included as **Table 5** and a summary by row is included as **Table 6**. A total of 318 gallons of 3DMe concentrate and 15 pounds of sodium bicarbonate were installed in the eight new permanent injection wells.

The manner of drilling and injection was similar to the methods used during previous site injections. As the DPT borings were advanced, injections were performed to enhance the formation permeability by propagating fractures through application of injectate under pressure. The solution was injected using a positive displacement pump. Fluid discharge from the pump was connected directly to the DPT rods for injection into the matrix. The DPT rods were equipped with slotted, retractable drive points that permit injection at multiple levels during the same push. As the drill rods were advanced, injections were performed in a top-down manner at three to five depth intervals, spaced approximately two feet apart vertically, ranging from 11 to 17 feet below ground surface (bgs) or to top of weathered shale.

The permanent injection wells were installed with 3/4-inch inside diameter (ID) Schedule 40 PVC flush-threaded riser pipe with the bottom section consisting of 0.010-inch machine slotted PVC screen with an end cap. A No. 20-40 sieve silica sand pack was installed to one foot above the top of screen, followed by a No. 30-65 fine-sand seal and grout seal (consisting of 95% cement and 5% powdered bentonite), and concrete was placed at the top, above the grout seal. The well risers were terminated approximately two to four inches below the ground or floor surface. The wells were completed with a 4-inch diameter aluminum skirt and cover set in a 12-inch diameter x 4-inch deep concrete pad flush with the ground surface inside the plant building and in a 12-inch x 12-inch x 4-inch concrete pad flush with the ground surface elsewhere.

2.4.3 Existing Injection Wells

A total of 42 existing permanent injection wells (those installed as part of the previous remedial action) used for supplemental injection amendments (3DMe and sodium bicarbonate) are depicted on **Figure 4**. Wells used for amendment injections in 2014 are colored in pink. A manifold system with flow control and meters was used to deliver

product to multiple wells simultaneously. A total of 105 gallons of 3DMe concentrate and 270 pounds of sodium bicarbonate were used in batch mixes and delivered to the existing wells.

A detailed summary is included as **Table 5**. Measurements were estimated based on visual observations of the gallon markings on the totes and mixing tank while the injectate was field emulsified. Any variation in quantities between the text and summary tables is related to differences in estimating methods on a batch versus local application scale.

2.5 SOURCE AREA – TRAP AND TREAT BOS 100

A total of 23 drums, each containing about 210 lbs, or a total of 4,830 lbs of BOS 100, were shipped to the site on December 11, 2013. The drum contents consisted of BOS 100 stored in nitrogen, to keep the BOS 100 (which is reactive with oxygen) from contacting air. One drum at a time was opened and flooded with water to displace the nitrogen gas and keep the contents stable prior to and during mixing with water for injection. A specific pre-calculated amount of the wet BOS 100 was added to water in a re-circulating mixer tank, to prepare an injectable slurry. The weight of wet BOS 100 to volume of slurry or injectate was approximately 1:1 in Zones 1B, 2, and 7 (one pound of BOS 100 in one gallon of prepared slurry), while in Zone 6 the mix ratio was 1:2 (more dilute, with one pound of BOS 100 in two gallons of prepared slurry). A high pressure D35 Wanner Engineering positive displacement pump capable of 35 gallons per minute (gpm) at 1,200 pounds per square inch gauge (psig) was used to pump the BOS 100 injectate through an injection head attached to a direct-push drilling rod, and the granules of BOS 100 were sheared in the injection head to a smaller size as they were emplaced by pressure into the formation.

2.5.1 BOS 100 Injections

BOS 100 injections were conducted in three phases: from December 16 through December 20, 2013, from January 6 through January 10, 2014, and from January 13 through January 16, 2014. The 2013-2014 BOS 100 injections were performed in four zones, referred as Zones 1B, 2, 6, and 7, following the zone convention established in the 2012 injections and shown in **Figure 5**.

A total of 72 DPT borings were advanced using a track mounted Geoprobe® 7822DT rig, equipped with 1.5-inch to 2.5-inch-drill rods, to perform BOS 100 direct injections. A 2-inch diameter concrete coring machine was used to core the floor slab at each location prior to boring advancement. BOS 100 locations were laid out on an approximate 5 foot by 5 foot offset (rectangular) grid, where possible, in the source area (mid-western section of the building). The offset rectangular grid was designed to create a series of "staggered" lines of injectate for maximum areal coverage and uniform distribution. The proposed injection locations were located by field personnel using taped measurements from existing site features. Some planned locations were offset due to physical obstructions in

some areas, such as walls, overhead or underground utilities, thickened concrete floor slabs and ramps, and heavy machines or other manmade structures.

After completion, the as-built injection locations were mapped by field personnel using taped measurements from existing site features. As-built injection locations for the BOS 100 injection points, designated as BI-1, BI-2, BI-3, etc., are shown on **Figure 5** and the injection locations in individual zones are presented in **Figures 5A** through **5D**. New injection locations are depicted in green and the "BI" designation has been removed for clarity. The injection locations shown in the figures should be considered accurate only to the degree implied by the method of measurement used.

A total of 23 drums or a total of 4,820 lbs of BOS 100 was injected into the 72 multi-level overburden and shale injection points. Based on the available groundwater elevations in the adjacent monitoring wells and experience gained during the first installed injection boreholes, the vertical distance from the top of groundwater to the top of bedrock for subsequent boreholes was estimated and the interval elevations were adjusted. The injection points were driven into the overburden, terminating at approximately 9 to 15 feet bgs, and into the top of weathered bedrock shale, at approximately 9 to 16 feet bgs. Injections were performed from the top down, to prevent creation of preferential pathways at depth, ahead of the injection tooling. Depths of injection were staggered between boreholes, alternating between depths at odd intervals (7, 9, 11, 13, 15, 17 feet bgs) and even intervals (6, 8, 10, 12, 14, 16 feet bgs), or until the depth to weathered bedrock. If the depth to weathered bedrock was encountered at a higher elevation than anticipated, then the remaining dosage for the overburden was injected at the soil-weathered shale interface. In the weathered shale, BOS 100 was injected in one to two intervals in the top 1.5 feet or to refusal depth. If refusal was encountered at a higher elevation, then the injection point was backfilled with hydrated bentonite, drilled through in the same location to required depth using a skid steer and auger attachment, and then the remaining dosage for the borehole was injected at the measured depth in the weathered shale. The process was repeated, if necessary, to reach the desired depths of injection in the weathered shale rock.

During injections, occasional day-lighting of the BOS 100 slurry at the surface occurred through cracks and joints in the concrete floor slabs. Frequent day-lighting was observed at the joint cracks along the thickened slabs while injecting at some locations in Zone 1B, and from cored holes for planned injection points. The day-lighted material was collected into 55-gallon drums using a motorized drum-vacuum, and was used to hydrate bentonite backfill upon completion of injection(s).

BOS 100 dosage in the overburden was evenly divided between two to seven depth intervals in each boring, depending on the depth to bedrock, or approximately 10 lbs at each depth interval, except in Zone 6 where 5 lbs were injected per interval. The dosage in shale was divided between one to three depth intervals in each boring, depending on the depth to refusal, or approximately 10 to 15 lbs per interval in Zone 1B, 5 to 20 lbs per

interval in Zone 2 and 20 to 80 lbs per interval in Zones 7. At each injection interval, the planned volume of BOS 100 slurry was injected, causing fracture propagation in the matrix, followed by injecting an additional 10 gallons of water to purge the granular solids from the hoses and probe to prevent plugging. Sporadically during the injections, the slurry flow velocity became too low to keep the BOS particles suspended. In these events, the particles bridged and packed in the hose and probe, requiring disassembly and manual cleaning of the hoses and probe.

Sustained injection pressures were relatively low in the overburden and ranged from 250 to 600 pounds per square inch (psi), with an average of approximately 340 psi. Sustained injection pressures in the weathered shale ranged from 250 to 800 psi, with an average of approximately 360 psi.

A detailed injection log, with the borehole depths, individual fracture pressures and BOS 100 distribution at each depth interval, is provided in **Table 7**. As seen in **Table 7**, refusal in the primary source area boreholes occurred at depths ranging from 11.5 to 17 feet bgs. In boreholes where bedrock or refusal depths were encountered at higher elevation than anticipated, the remaining BOS 100 dosage for the overburden was injected at the soil/bedrock interface and the remaining dosage for shale was injected at the refusal depth, or at an adjacent injection point, with the exception of injections in Zones 1B and 2, where the injection point was backfilled with hydrated bentonite, drilled through to required depth using a skid steer and auger attachment, and then the remaining dosage for the borehole was injected at the measured depth in the weathered shale.

Table 7 and the summary **Table 8** show that a total dosage of about 4,820 lbs of BOS 100 was recorded during the injections. However, measurements during mixing of the slurry were estimated using a hand-scoop. A total of 23 drums of BOS 100 (210 pounds each) were actually consumed, making the true dosage 4,830 lbs. BOS 100 quantities injected in each zone are summarized in **Table 7.**

After completion of injections, the boreholes were backfilled with hydrated bentonite pellets and the holes in the floor were patched with a Portland cement-concrete mixture.

2.5.2 Monitoring During BOS 100 Injections

AST collected groundwater samples intermittently during the injection process from permanent and remediation test wells (TW-6, TW-10, MW-11A, MW-11B, TW-13, TW-18 and MW-25) in the BOS 100 injection area during the injections. The samples were collected to evaluate BOS 100 remediation effectiveness at intermediate stages of injections to monitor progress. Collected samples were shipped to Remediation Products, Inc. (RPI) for analysis.

During injections, samples were collected on December 20, 2013 (TW-6, TW-10, MW-11A, MW-11B, TW-13 and MW-25), January 7, 2014 (TW-18), January 10, 2014 (MW-11A and MW-11B) and January 15, 2014 (TW-13).

During these events, purging and sample collection were performed using a peristaltic pump equipped with clean disposable tubing (polyethylene tubing with a small length of silicone tubing inserted at the pump's rotating cam). The wells were purged of three well volumes prior to sample collection. Some wells had too low a yield to purge three well volumes before being purged dry. These wells were allowed to recover for a few hours to overnight. Groundwater samples were collected into sample containers from the pump discharge tubing.

At each well, a groundwater sample was collected and transferred into 40-milliliter (mL) volatile organic analysis (VOA) vials for analysis of selected CVOC parameters. The samples were shipped to RPI for analysis. RPI, the manufacturer of BOS 100, is not a commercial laboratory. Therefore no formal laboratory report was provided, and the analyses were only used for performance monitoring during the injection.

2.6 AEROBIC BIOREMEDIATION - ORC FILTER SOCK PILOT TEST

On December 10, 2013 AMEC installed MW-32 at the location shown on **Figure 3** south of MW-14. The purpose of this well was to provide a vehicle for the placement of filter "socks" containing ORC. Filter socks are permeable, fabric sleeves filled with pure ORC Advanced® material. The purpose of the pilot test was to determine the effect of the ORC on degradation of intermediate CVOCs (cis-1,2-dichloroethene [cis-1,2-DCE] and vinyl chloride [VC]) in MW-14 by increasing DO. The well was installed using DPT drilling methods to probe refusal (16 feet bgs), and was constructed of 2-inch diameter, Schedule 40 PVC, flush-threaded well casing and a ten-foot section of manufactured well screen with 0.010-inch machined slots. A washed sand filter pack was placed around the well screen from the bottom of the boring to approximately two feet above the top of the well screen. A minimum 2-foot thick bentonite seal (consisting of hydrated bentonite chips) was placed above the washed sand filter pack, and concrete was placed at the top, above the bentonite seal. The well was finished with a 4-inch diameter bolting manhole cover set in a concrete pad flush with the ground surface. Well logs are included in **Appendix C**.

On January 17, 2014 both MW-32 and MW-14 were sampled prior to installing the ORC fabric socks. The wells were sampled using low flow sampling techniques with a peristaltic pump. The samples collected were analyzed for VOCs, biochemical oxygen demand (BOD) and chemical oxygen demand (COD). The laboratory report is included in **Appendix D**. The DO levels in the wells on January 17, 2014 were 0.27 milligrams per liter (mg/L) in MW-14 and 0.31 mg/L in MW-32.

The ORC filter sock assembly was placed in MW-32 on January 24, 2014. A total of 10 fabric socks, each measuring 2 inches in diameter and approximately 12 inches long, were assembled onsite into one filter sock unit using banding and roping material provided by the manufacturer. The depth to water at the time of placement was 3.14 feet below the top of casing and the total depth of the well was 16 feet, therefore the entire length of filter sock material was submerged at the time of placement. The DO levels approximately 2 hours after placement of the socks were 5.7 mg/L in MW-32 and 16.5 mg/L in MW-14. By the May 2014 groundwater sampling event, however, the DO in MW-14 had dropped back to below one mg/L (0.23 mg/L).

2.7 ANAEROBIC BIOAUGMENTATION - DHC INSTALLATION

As part of an anaerobic bioaugmentation pilot test, AMEC recommended introduction of cultured DHC bacteria via the two injection wells immediately adjacent to MW-13, G2P and G4P. A Regenesis product called Bio-Dechlor Inoculum® (BDI) was used. According to Regenesis, the DHC cultures in this product are capable of completely dechlorinating trichloroethene (TCE) and its breakdown products.

On the morning of February 3, 2014, AST mobilized personnel and equipment to the site and set up for the injection effort to begin later that day. The first step was to prepare a batch of anoxic water that could be used to condition the formation for injection of the DHC. When AST arrived on site, a 425 gallon tank that was previously filled with a water and 3DME solution on January 29, 2014 was measured for DO which was recorded as 7.4 mg/L. Nitrogen gas was used to sparge the tank to the required 1.0 mg/L or less DO. Nitrogen sparging was performed for the remainder of the day and the following day. The DO content was monitored until it reached 1.0 mg/L mid-day on the second day, and sparging was continued for approximately 20 minutes to ensure the DO levels were stable.

AST primed the pneumatic diaphragm pump and connected to the wellhead for G4P. At 11:05 a.m., a 100-gallon flush of the anoxic water was injected into the well at approximately 4 gpm and 10 psi. After the well was flushed with the anoxic water, 3 liters of BDI were prepared as per the manufacturer's recommended procedure, and injected into G4P using nitrogen gas at 10 psi. Immediately following the completion of the BDI injection at 11:36 a.m., a second 100-gallon flush of the anoxic water was injected into G4P at approximately 3.5 gpm and 10 psi. Upon completion, AST disconnected from G4P and connected to the wellhead for G2P.

After setting up on G2P, AST injected a 100-gallon flush of the anoxic water at approximately 3 gpm and 10 psi into GP2. Immediately following the initial anoxic water flush, 3 liters of BDI were prepared and injected into G2P with nitrogen gas at 10 psi. This again was followed with a 100-gallon flush at approximately 2 gpm and 10 psi. Throughout the injection at G2P, the water level of MW-13 was monitored and it was

determined that the depth of water rose to 0.12 feet below top of casing (typically the static water level in MW-13 is approximately 3 feet below the top of casing).

2.8 TW-18 AND TW-19 INSTALLATION

On January 7, 2014, AMEC installed two remediation test wells at the locations shown on **Figure 3** south of the former WWTR. These wells, referred to as TW-18 and TW-19, were installed using DPT drilling methods to probe refusal. The purpose of the new wells was to provide better definition of groundwater concentrations in this area of the property. Historically, this area, which is inside the former manufacturing facility, had been inaccessible for drilling due to low ceilings and use of the area as an office. Ceiling tiles have since been removed from the area and it has been vacated thus opening the area to installation of wells.

The two new remediation test wells were constructed of 3/4-inch diameter, Schedule 40 PVC, flush-threaded well casing and manufactured well screen with 0.010-inch machined slots. The wells were constructed with 10 feet of screen. A washed sand filter pack was placed around each well screen from the bottom of the boring to approximately 2 feet above the top of the well screen. A minimum 2-foot thick bentonite seal (consisting of hydrated bentonite chips) was placed above the washed sand filter pack, and concrete was placed at the top, above the bentonite seal. The wells were finished with 4-inch diameter bolting manhole covers set in concrete pads flush with the ground surface. Well logs are included in **Appendix C**.

AMEC attempted to install TW-18 at two locations within the room to the south of the WWTR. Two borings, TW-18A and TW-18B, were advanced prior to installing the well at its final location. At both TW-18A and TW-18B, recovery was poor and AMEC could not confirm that the borings were located in native materials. The final location for TW-18, which was in native materials, was north of the first two borings, and just south of the southern WWTR wall.

The wells were developed and sampled on January 17, 2014 using a peristaltic pump. TW-18 and TW-19 were sampled for VOCs using low flow sampling techniques in order to establish baseline conditions in each well. The laboratory report is included in **Appendix D**.

2.9 WELL SURVEY

On February 6, 2014, Endris Engineering mobilized to the site to survey newly installed wells (TW-16 through TW-19 and MW-32). As part of the survey, several wells within the remedial amendment areas were also checked to confirm that previous survey data were correct. Several of the wells were found to have slight differences in top of casing and ground surface elevations, compared to the original survey, likely from a combination of factors (surface work and repairs around concrete well pads and pressure in the

subsurface related to the injections). Wells with elevation changes included MW-8, MW-9, MW-11A, MW-11B, MW-12A, MW-12B, MW-13, MW-14, MW-21 and MW-23. The corrected top of casing elevations are included on **Table 3**, and water level elevations calculated from measurements collected after February 6, 2014 are based upon the corrected casing elevations.

2.10 INVESTIGATION-DERIVED WASTE

The following investigation-derived wastes (IDW) were generated and disposed of as hazardous waste during the remedial activities and groundwater monitoring events from December 2013 through February 2014:

- Five drums of personal protective equipment waste (gloves, Tyvek® suits, etc.).
- Two drums of used bentonite from augering waste.
- Two drums of water and 3DMe from injectate mixing tank cleaning.
- One drum of soil cuttings from drilling and sampling events, along with asphalt from coring for injection points.
- One drum of concrete cores from coring for injection points.
- One drum of purge water from onsite wells.

A total of 12 drums of hazardous waste were generated. One drum of non-hazardous oil absorbent mixed with hydraulic oil generated during August 2013 waste also collected at the same time. The drum was generated when a hydraulic line broke on a truck that was present onsite to pick up soil generated during the excavation in the wastewater treatment room.

As they were generated, the drums were labeled with a hazardous waste label which included content information and the accumulation start date. The drums were staged in a secured hazardous waste accumulation area in the onsite building and inspected weekly by a representative of RBTC. RBTC made arrangements for pick-up on May 5, 2014 and offsite disposal of the wastes through direct contract with Heritage Environmental Services. Waste disposal manifest documentation is included in Appendix E.

3.0 POST-INJECTION MONITORING

During and following completion of the injections, monitoring was performed to determine the effectiveness of the selected technologies in the source and plume areas. The following monitoring was completed:

- Well Redevelopment and RPI Sampling - On February 6, 2014, TW-6, TW-10, TW-13 and MW-11A were redeveloped to ensure connection with the surrounding formation prior to sampling. On February 7, 2014, groundwater samples were collected from the wells and samples were submitted to RPI for analysis.

- 7-Day Post Injection Field Parameter Collection Event - Approximately one week after the injections were completed, on February 13, 2014, MW-3, MW-4, MW-5, MW-7, MW-8, MW-13, MW-17, MW-21, MW-22, MW-28 and TW-19 were field-tested for pH, SC and temperature.

- 30-Day Post Injection Field Parameter Collection Event - Approximately one month after the injections were completed, on February 26, 2014, the above wells (plus MW-14 and with the exception of MW-28) were again field-tested for pH, SC and temperature.

- Water Level Readings - On April 29, 2014, water level readings were collected from all wells to determine if well fouling (e.g., biological growth or presence of BOS 100 particulates) was occurring and redevelopment of selected wells would be necessary ahead of groundwater sampling.

- Well Redevelopment and Passive Diffusion Bag (PDB) Placement - Based on visual appearance of water in the wells and water level measurements collected on April 29, 2014, AMEC redeveloped four wells on May 8, 2014 (MW-21, MW-22, MW-5, and MW-26). In addition AMEC placed PDBs in PW-1, PW-2 and the Kiper well.

- Site-Wide Groundwater Sampling - Approximately 90 days after the injection, from May 19, 2014 to May 22, 2014, a full round of groundwater sampling was conducted. Field parameters, water level measurements and samples for VOCs (USEPA Method 8260B) were collected from all onsite wells. In addition, the following analyses were performed:
    - Chloride (USEPA Method 325.2) and iron (USEPA Method 6010) were analyzed in groundwater samples from MW-11A, MW-11B, MW-12A, MW-12B and TW-10 (wells in the primary source area).
    - Methane, ethane and ethene (USEPA Method RSK 175) and total organic carbon (USEPA Method 9060) were analyzed in groundwater samples from MW-3, MW-4, MW-5, MW-7, MW-8, MW-13, MW-17, MW-21, MW-22, MW-23 and SW-4 (wells in the secondary source areas).
    - BOD (USEPA Method 5210 B) and COD (USEPA Method 410.4) were analyzed in the groundwater sample from MW-14.

Groundwater samples collected during the events described above were stored in laboratory-provided containers and preserved according to method requirements. They

were maintained chilled in iced coolers, and shipped by overnight carrier to ESC for laboratory analysis. Water level readings are included on **Table 3**. Field parameter readings collected during the various monitoring events are summarized in **Table 4**. The full laboratory reports for the May 2014 sampling event are provided in **Appendix D.** Long-term hydrographs showing groundwater levels over time are provided in **Appendix F**.

3.1 GENERAL POST-INJECTION GROUNDWATER CONDITIONS

During injections, both BOS 100 and 3DMe moved through the subsurface and penetrated selected monitoring wells located in the injection areas. Fine particles of BOS 100 were observed in the permanent wells (MW-11A, MW-11B, MW-12A, MW-12B, MW-25, and MW-27) as well as the remediation test wells (TW-6, TW-9, TW-10, and TW-13) in the BOS 100 injection area. Evidence of 3DMe (based on color and/or elevated SC) was observed in the permanent wells (MW-3, MW-4, MW-5, MW-7, MW-13, MW-17, MW-21, MW-22 and MW-23) in the 3DMe injection areas.

3.1.1 Well Redevelopment

The wells that appeared to be impacted the most were redeveloped and purged prior to the sampling events on February 6, 2014 (MW-11A, TW-6, TW-10, and TW-13) and May 8, 2014 (MW-5, MW-21, MW-22, and MW-26), in order to try and clear the monitoring wells of remnant BOS 100 and 3DMe, re-establish connection with the surrounding formation, and obtain representative potentiometric readings.

Redevelopment was performed by surging with a clean disposable bailer, then purging with a peristaltic pump equipped with clean disposable food-grade tubing. Alternatively, some wells were redeveloped and purged by using a Waterra inertial pump equipped with clean disposable food-grade tubing and a foot valve. Each well was redeveloped and purged until water appeared clear. After purging, most wells were observed to continue producing some evidence of injected materials. In general, these wells cleared up further, and yield was improved, in the subsequent purging and sampling events.

During the February 6, 2014 redevelopment event, approximately 2 feet of BOS 100 were found in the bottom of MW-11A (as evidenced by a change in the total depth of the well and presence of BOS 100 during well purging). The total depth of the well prior to redevelopment was 12.95 feet below the top of casing, after redevelopment it was 14.34 feet below the top of casing. The reported total depth of the well is 14.8 feet.

3.1.2 Water Level Gauging

Full rounds of water level gauging were performed on December 3, 2013, April 29, 2014 and May 19, 2014. Groundwater elevation contour maps for pre- and post-remedial activities are provided as **Figure 6** (December 3, 2013) and **Figure 7** (May 19, 2014).

Long-term hydrographs showing groundwater levels over time are provided in **Appendix F**. Overall, water level readings and hydraulic relationships between monitoring points were similar to previous conditions. The lateral hydraulic gradient in the shallow groundwater zone remained generally from the southwest to the north-northeast, toward the Beaverdam Creek drainage north of Embry Drive. Additional discussion is provided below in Section 4.1.

3.2 FIELD PARAMETER COLLECTION EVENTS

On February 13 and 26, 2014, the monitoring wells mentioned at the beginning of Section 3.0 were sampled by AMEC for field parameters. The wells were purged and sampled using disposable bailers. Field parameters (pH, SC and temperature) were obtained using a multi-parameter meter (Hanna HI 9812-5).

3.3 GROUNDWATER SAMPLING

3.3.1 February 7, 2014 Sampling Event

On February 7, 2014, AMEC collected groundwater samples from wells that had in part been redeveloped the previous day. Samples were collected with a peristaltic pump from wells TW-6, TW-10, MW-11A, MW-11B, TW-13 and MW-25. Prior to collecting samples, because well development had occurred the previous day, a minimum amount of water was purged from each location. Samples were sent to RPI for VOC analysis.

3.3.2 PDB Placement

On May 8, 2014, AMEC personnel installed PDBs in three former water supply wells, including the two onsite water supply wells (PW-1 and PW-2) and the former water supply well on an offsite property (Kiper Well). At PW-1 (depth is reportedly 367 feet) the PDB was placed at approximately 290 feet below the top of the casing. Based on the results of the down hole logging performed in February 2012, PDB placement considered the depth of the obstructions seen in PW-2 and the Kiper Well. Because of the obstruction in PW-2 at approximately 136 feet (total well depth is estimated to be approximately 475 feet), the PDB was placed at approximately 135 feet below the top of casing. At the Kiper Well (depth is reportedly 80 feet deep), the PDB was placed at approximately 39 feet below the top of the casing.

3.3.3 90-Day Post Injection Sampling Event

From May 19 through 22, 2014, 54 wells were sampled by AMEC for VOC analysis, including 37 permanent shallow and mid-level monitoring wells (MWs), 10 remediation test wells (TWs), four sentinel wells associated with the BOS treatment area (SWs), and three former water supply wells (PWs and Kiper well).

Most permanent wells and most remediation test wells yielded enough water to reach equilibrium with the geochemical conditions in the surrounding groundwater flow zone, with the exception of well MW-21, remediation test wells TW-6, TW-13, TW-18, TW-19, and sentinel wells SW-1, SW-2, SW-3, and SW-4. These wells had too low a yield to reach equilibrium conditions, generating between 1/4 and one gallon of purge water per well, before being purged dry. The wells were allowed to recover for a few hours to overnight, and samples were collected using a peristaltic pump equipped with clean disposable food-grade tubing. At each well, a groundwater sample was collected from the middle of the water column and transferred into laboratory-supplied containers for VOC analyses.

In addition to the VOC analyses, samples from 11 wells in the secondary source areas (MW-3, MW-4, MW-5, MW-7, MW-8, MW-13, MW-17, MW-21, MW-22, MW-23, and SW-4) were analyzed for methane, ethane, and ethene by USEPA Method RSK 175 and TOC by USEPA method 9060. Additionally, five wells in the primary source area (MW-11A, MW-11B, MW-12A, MW-12B and TW-10) were analyzed for chloride by USEPA Method 325.2 and iron by USEPA Method 6010. The sample collected from MW-14 was also analyzed for BOD and COD.

The PDBs that had been placed in the three former water supply wells were removed on May 22, 2014 by AMEC personnel. Contents of the PDBs were transferred into 40-mL VOA vials preserved with hydrochloric acid, and submitted for VOCs analysis (USEPA Method 8260B).

Field quality control (QC) samples collected during groundwater sampling included four blind field duplicate samples (one for each day of sampling), from MW-3, MW-7, MW-11A, and TW-13, and two laboratory-provided trip blanks which accompanied the samples in the coolers shipped this monitoring event. The collected groundwater samples were shipped to ESC for analysis.

4.0 REMEDIATION IMPLEMENTATION RESULTS

This section summarizes the results of the remediation activities in terms of potentiometric levels, field groundwater quality results, and laboratory analytical results from sampling performed.

Trend analyses were performed for three CVOCs: TCE, cis-1,2-DCE and VC. In the trend analyses, current results are summarized in **Table 9** and compared to the baseline (pre-remediation) concentrations from June 2012, on a well-by-well basis. **Figures 8 and 9** provide the results and contour maps for total CVOCs both before and after the most recent remedial activities (in June 2013 and May 2014, respectively), and **Figures 10 and 11** provide the results and contour maps for TCE. Analytical summary tables and trend graphs of selected parameters and results in selected wells over time are provided in **Appendix G**. The remediation performance results are discussed below, for each of the four treatment areas, following the discussion of potentiometric conditions.

4.1 POTENTIOMETRIC CONDITIONS

Figure 6 is a groundwater elevation contour map for the shallow zone (the groundwater flow zone at the soil-bedrock interface), drawn from measurements made on December 3, 2013, immediately prior to the most recent remedial activities. Throughout the remedial activities, due to the high quantity of fluids injected, groundwater levels were intermittently measured in the permanent wells closest to the injection sites, and were observed to be temporarily and locally raised above the static levels measured in December.

Figure 7 is a groundwater elevation contour map for the shallow zone drawn from measurements made on May 19, 2014 during the 90-day post-remediation groundwater monitoring activities. Overall, water level readings and hydraulic relationships between monitoring points were similar to pre-injection conditions, indicating that the temporarily raised groundwater levels resulting from the injections dissipated and had returned to static levels over the three months since injection. The lateral hydraulic gradient in the shallow groundwater zone, as illustrated in the groundwater level elevation contour maps, remained generally from the southwest to the north-northeast, toward the Beaverdam Creek drainage north of Embry Drive.

Similar to previous post injection results, some wells are yielding water level readings that are anomalous by comparison to the surrounding wells. These included MW-5, MW-8, MW-22 and MW-26 (December 2013) and MW-8 and MW-21 (May 2014). MW-31 had an anomalous reading during the May 2014 event; however, this reading was related to a problem with the well seal causing surface water to enter the monitoring well. The data from these wells were disregarded in preparing the groundwater potentiometric map for the shallow groundwater zone, as noted on the map.

4.2 SOURCE AREA (BOS 100) RESULTS

BOS 100 was used to treat the primary source area, where baseline groundwater concentrations total CVOCs (TCVOCs), prior to any injections, were generally greater than 50 mg/L. BOS 100 injections in 2013-2014 (**Figures 5, 5A, 5B, 5 C, and 5D**) were performed in areas where groundwater CVOC concentrations continued to persist at elevated concentrations, and in the additional source area identified in 2012, the former WWTR. Sumps in the WWTR were closed in August 2013; however, soils below the sumps had not been treated previously. Persistence of concentrations in some of the previously treated areas was attributed to uneven applications and problems with attaining the necessary depths of injection. Therefore, additional BOS 100 injections were completed in the following main areas:

- Zone 1B near MW-25 and TW-6 (**Figure 5A**), where it had been concluded that irregular and incomplete distribution of BOS 100 in the vicinity of TW-6 caused differences in groundwater concentrations between two similarly installed wells close to each other.

- Zone 2 near MW-11A, MW-11B and TW-10 (**Figure 5B**), where it had been concluded that irregular and incomplete distribution of BOS 100 in the fissile shale bedrock in the vicinity of MW-11A caused differences in groundwater concentrations between two similarly installed wells close to each other.

- Zone 6 near TW-13 (**Figure 5C**), where it was concluded that irregular distribution of BOS 100 due to obstructions in the building floor caused elevated levels of CVOCs to persist in groundwater in the area.

- Zone 7 (**Figure 5D**), a newly created zone associated with the WWTR on the west side of the building.

Shallow zone wells within the BOS 100 injection area include: permanent monitoring well pairs MW-11A/B and MW-12A/B; permanent monitoring wells MW-25, MW-26, MW-27; remediation test wells TW-5, TW-6, TW-9, TW-10, TW-11, TW-12, TW-13 and TW-14; and sentinel wells SW-1, SW-2, SW-3 and SW-4. All wells in this area were sampled during the 90- day sampling event.

4.2.1 Field Parameter Monitoring

Groundwater field parameters are used most commonly to determine when monitoring wells have been adequately purged and groundwater samples are representative of the surrounding aquifer. Current treatment with BOS100 involves carbon sorption and chemical reduction with iron, so field parameter ranges and trends are not predictive of the success of treatment. However, when evaluating the timing for transition to bioremediation, these parameters and their trends over time provide important indications of the potential for natural degradation of groundwater contaminants. In general, field parameters collected as part of the groundwater monitoring included turbidity,

temperature, SC, pH, DO and ORP. However, because of the presence of remnant BOS 100 in many of the wells in the injection area, collection of data related to DO, ORP and turbidity was limited during some of the sampling events. **Table 4** provides the recorded results of field parameter monitoring since February 2012, and trend graphs depicting certain field parameters over time are included in **Appendix G**.

Similar to the previous injections, except for increased turbidity in some wells due to the presence of BOS 100, the injection of BOS 100 appears to have had little effect on most of the field parameters. This is both an expected and desired result, since ideally the BOS 100 does not introduce any dissolved materials into the aquifer, although field parameter changes can result from the introduction of potable water in the BOS 100 slurry during injections and from scavenging of dissolved oxygen by the iron component of BOS 100.

4.2.2 Groundwater Analytical Results

Trend analyses performed on the data for TCE, cis-1,2-DCE and VC are provided in **Table 9,** except for TW-6. TW-6 has not been included on the table due to anomalous initial results from June 2012. In addition, tables and analytical graphs depicting certain analytical parameters over time are included in **Appendix G**.

After the first BOS 100 injection, with the exception of TW-6 and MW-11A, concentrations of all CVOCs in the BOS 100 area wells declined steadily during the first two months, and had rebounded slightly by the third month. Most wells declined by two and up to three orders of magnitude without significant rebound by 90 days. The following summarizes significant results after the second round of injections in the selected areas of the zones treated with BOS 100:

- In TW-6 (next to MW-25), the pre-injection concentration of TCE was only 0.23 mg/L in June 2012 (possibly indicating the well had not fully stabilized at the time the June 2012 sample was collected or that the subsequent BOS 100 injections altered groundwater flow pathways in the vicinity of TW-6), whereas the post-first injection concentrations were 15 mg/L (December 2012) and 18 mg/L (February 2013). By June 2013, the concentration of TCE was 26 mg/L. After the second injection, in February 2014, the concentration of TCE was 0.041 mg/L but by May 2014, had increased to 8.0 mg/L. By comparison, TCE in MW-25 started at 2.6 mg/L in June 2012, dropped to 0.48 mg/L in December 2012, rebounded to 1.1 mg/L in June 2013, and was 0.68 mg/L in May 2014. As seen in Tables 1 and 2, MW-25 and TW-6 have similar bottom elevations, but MW-25 has an 8-ft screen length, while TW-6 has a 5-ft screen so the wells are not sampling from identical depth intervals.

- In MW-11A (the deeper well of the MW-11A/B pair), after the first injection event in late 2012, concentrations of TCE fell at first (from 43 to 8.1 mg/L), then increased back over half of the pre-injection levels (to 22 mg/L) by February 2013. In June 2013, concentrations had increased to 34 mg/L; however, after the second injection event, concentrations of TCE decreased to 1.2 mg/L (1.4 mg/L TCVOCs),

which is a 97% reduction in TCE levels since June 2012. Cis-1,2-DCE and VC also had reductions of 94% and 95% respectively. Therefore, it appears that the first injection did not provide an adequate dose for the mass of VOCs in the surrounding aquifer and the second injection was more successful by providing additional BOS 100 and also achieving better distribution. However, additional monitoring will be required to evaluate rebound (if any).

- In TW-13, after the first injection event, concentrations of TCE decreased by 98% (from 72 mg/L to 1.1 mg/L) but were still over 1 ppm. Therefore this area was identified as an area requiring more BOS 100. By June 2013, before the second injections, the concentration of TCE in TW-13 had increased to 3.3 mg/L. After the second injection, the concentration was 3.9 mg/L. TW-13 is located downgradient of the old Henry Filter pit, and the disturbed fill around the pit likely is acting as a preferential pathway. Additional BOS 100 injections provide additional reagent dosage, but also alter groundwater flow by providing additional fractures.

- In MW-12B (the shallower of the two wells in the MW-12A/B pair, in Zone 5), concentrations of TCVOCs from the initial injection decreased over 2 orders of magnitude from 83 mg/L (June 2012) to 0.89 (June 2013); however, after the second injection event, concentrations have increased an order of magnitude to 2.5 mg/L. However, this increase in TCVOCs is primarily related to an order of magnitude increase in cis-1,2-DCE levels, and could indicate some migration of groundwater into this area from outside the BOS 100 treatment area. Both SW-1 and SW-2 analyses showed that elevated TCE and TCVOC concentrations were present at the perimeter of the BOS treatment area upgradient of MW-12B.

- Concentrations of CVOCs for the remaining wells in the BOS 100 injection area have continued to remain low, with an over 97% reduction in TCE levels, 96% reduction in cis-1,2-DCE levels and 64% reduction in VC levels (the statistics for VC area are skewed by a detection limit elevated above previous reported concentrations in MW-25 during the May 2014 sampling event – most wells have over 95% reduction in VC levels).

- Remaining wells with concentrations of TCVOCs over 1 mg/L are MW-11A (related to TCE), MW-12B (related to cis-1,2,-DCE), TW-6 (related to TCE), TW-13 (related to TCE), and two newly sampled sentinel wells on the edge of the BOS 100 injection area, SW-1 (TCVOCs at 2.3 mg/L and TCE at 1.7 mg/L) and SW-2 (TCVOCs at 76 mg/L and TCE at 57 mg/L). The closest well to SW-2 within the BOS-100 injection area is TW-9 which has a TCVOC level below 1 mg/L (0.44 mg/L in May 2014).

In May 2014, MW-11 A, MW-11B, MW-12A, MW-12B, and TW-10 were also sampled for chloride and iron. Chloride concentrations ranged from 12 mg/L (MW-11A) to 66 mg/L (MW-12A/B). Iron levels ranged from 0.098 mg/L (MW-11A) to 2.8 mg/L (MW-12B).

Based on these results, the BOS 100 appears to have been very effective in reducing CVOC concentrations in the source area overall, by one to three orders of magnitude. However there are areas where VOCs persist, specifically VOCs related to the primary

plume of TCE in the vicinity of TW-6, TW-13 and SW-2. Increases in cis-1,2-DCE relative to TCE in the vicinity of MW-12A/B may be related to inflow of groundwater from outside the BOS 100 treatment area.

4.3 SECONDARY SOURCE AREA (BIOSTIMULATION) RESULTS

Biostimulation injections with 3DMe were applied in the secondary source areas, where baseline groundwater TCVOC concentrations prior to any injections were between 10 mg/L to 50 µg/L. As part of the secondary source area injections, eight new permanent injection wells were installed (four in the vicinity of MW-5, three in the vicinity of MW-17 and one in the plume area near MW-3), and existing injection wells were used for delivery of product.

4.3.1 Field Parameter Monitoring

Table 4 provides the recorded results of field parameter monitoring since February 2012. After injection, many of the wells could not be monitored for DO and ORP because of the presence of remnant 3DMe in the wells, which prevented purge water from being run through direct-read flow-through cell equipment, due to the risk of fouling the sensors. SC and temperature readings were collected using a non-flow-through direct read instrument.

Ideal conditions for reductive dechlorination of TCE typically include: a pH of 5 to 9 s.u.; DO less than 1 mg/L; and ORP between -100 and -225 millivolts (mV). However, evidence of dechlorination is sometimes observed with ORP between 0 and -50 mV. pH was within the ideal range for all wells, DO of less than 1 was reported for MW-5, MW-17 and MW-22 in May 2014, and ORP was within ideal conditions in May 2014 in MW-5 and MW-17. The biostimulation design is intended to create "mixed behavior" between the injection rows. Methanogenic conditions are present immediately adjacent to the injection wells (ORP < -225 mV), ideal reducing conditions downgradient, and aerobic conditions upgradient of the next injection row (ORP > 0 mV and DO > 1 mg/L) to prevent the accumulation of VC.

4.3.2 Groundwater Analytical Results

After the initial 3DMe injections, TCE concentrations in the secondary source area wells (MW-5, MW-8, MW-17 and MW-22) declined significantly at least one and in some cases two orders of magnitude. As anticipated, cis-1,2-DCE, 1,1-DCE and VC concentrations increased sometimes by as much as an order of magnitude over the same time period.

After the second injection, results were mixed with respect to TCE. TCE was not detected in MW-8, MW-17 or MW-22 in May 2014; however, TCE concentrations increased by an order of magnitude in MW-5 which is likely impacted by upgradient conditions at the BOS 100 treatment area. Overall, TCE concentrations have not rebounded and have been reduced by 97% compared to baseline (June 2012) levels and TCE concentrations in

MW-5 are still an order of magnitude below original levels (3.1 mg/L versus baseline of 30 mg/L).

With respect to degradation compounds, cis-1,2-DCE and VC levels are now decreasing, compared to the initial increase after the first injection. The exception is cis-1,2-DCE in MW-8, which continues to increase above baseline and first injection levels.

Methane, ethane and ethene were also analyzed in May 2014 at MW-5, MW-8, MW-17 and MW-22. As reductive dechlorination occurs, ethane, and ethene levels will increase. A widespread excess of methane (> 50 mg/L) combined with ORP below -225 mV would suggest that methanogenesis is dominating, which would decrease the efficiency of dechlorination. However, the intent of the biostimulation design is to foster "mixed behavior." This assumes methanogenic conditions (ORP <-225 mV) at the temporary and permanent injection wells, favorable dechlorinating conditions immediately downgradient (-50 mV >ORP >-225 mV), and aerobic conditions (ORP > 0 mV) upgradient of the next injection row. Ethane was only detected in MW-17. Ethene was detected and is increasing in MW-5, MW-17 and MW-22. Methane has increased an order of magnitude in MW-5, MW-17 and MW-22 since last sampled in February 2013 (MW-8 was not sampled for methane in February 2013). Methane detections ranged from 0.45 mg/L in MW-5 to 5.3 mg/L in MW-17. The presence of detectable methane, ethane, and ethane along with ORP ranging from +35.7 to -40.2 mV at these monitoring wells indicates the desired mixed behavior between injection rows.

Based on these results, 3DMe appears to have been very effective in reducing CVOC concentrations in the secondary source areas overall, by one to three orders of magnitude. However, in MW-5, TCE concentrations, which had decreased by two orders of magnitude after the first injection, increased by one order of magnitude after the second injection. MW-5 is unique at the site, since it is located cross-gradient to the nearest injection wells and down-gradient of the BOS 100 treatment area. Groundwater at MW-5 is impacted by residual VOCs from the BOS 100 and, being at the leading edge of the biostimulation area, bioremediation effects are mainly occurring downgradient. Additional VOC reductions can be achieved by implementing biostimulation in the BOS 100 area and particularly at the downgradient edge near MW-27, TW-13, and TW-14.

4.4 PLUME AREA (BIOSTIMULATION) RESULTS

Biostimulation injections were also applied in the less concentrated plume areas across the site, outside of and around the secondary source areas, where baseline TCVOC concentrations in groundwater initially were below 10 mg/L.

4.4.1 Field Parameter Monitoring

During May 2014, DO and ORP levels were "ideal" (see Section 4.3.1 above) for reductive dechlorination in most plume area wells including MW-4, MW-7, MW-13, MW-14, MW-21 and MW-23.

4.4.2 Groundwater Analytical Results

After the original injection, TCE concentrations in the wells included in the post-injection monitoring for the plume biostimulation area decreased by at least an order of magnitude in all wells without significant rebound in any well at the 90-day post-injection monitoring event. After the second event, TCE concentrations remained at least an order of magnitude below the baseline conditions except in MW-21, where TCE concentrations returned to baseline conditions (0.15 mg/L in June 2012 and in May 2014). Cis-1,2-DCE and VC concentrations are increasing in MW-21, and are at least an order of magnitude above baseline conditions. Increasing concentrations in MW-21 may be related to impacts in the shallow groundwater zone below the residential properties upgradient of that well, which have not been treated as part of the remedial activities.

Methane detections ranged from 1.7 mg/L in MW-21 to 10 mg/L in MW-4. These are indicative of the desired mixed behavior with methanogenic conditions at the injection rows and suitable dechlorinating conditions between rows.

Of the wells monitored in the plume (non-source) areas, MW-23 appears to have exhibited the best response to biostimulation. The TCE concentration in this well in May 2014 (0.028 mg/L) was two orders of magnitude below baseline concentration (1.1 mg/L)., cis-1,2-DCE concentrations were an order of magnitude above baseline conditions and VC concentrations were three orders of magnitude above baseline conditions. Nevertheless, TCVOCs in May 2014 (0.4 mg/L) were almost an order of magnitude below baseline (1.2 mg/L).

4.5 AEROBIC BIOREMEDIATION - ORC PILOT TEST RESULTS

The purpose of applying ORC was to evaluate pote tial acceleration of the breakdown of aerobically degradable daughter compounds of TCE (cis-1,2-DCE and VC). ORC filter socks are designed to provide a supply of DO to sustain or accelerate bioremediation over a period of 9-12 months (estimated). Because AMEC wanted to evaluate ORC's effectiveness in preventing accumulation of VC, MW-14 was selected as the pilot test area because the well had no detection of PCE and TCE and very low detections of the target daughter products.

The filter socks were placed in MW-32, a well installed in the immediate vicinity of MW-14, on January 24, 2014. Prior to placement of the ORC socks, DO levels and samples were collected from both wells on January 17, 2014. Prior to any remediation in the area, cis-

1,2-DCE and VC levels in MW-14 were 0.035 mg/L and 0.0056 mg/L, respectively. Prior to placement of the filter socks in MW-32, those levels were 0.028 mg/L and 0.0019 mg/L, respectively. On May 20, 2014, approximately 4 months after placement of the socks, concentrations of the two compounds were 0.021 mg/L and 0.0017 mg/L, respectively, in MW-14.

BOD and COD levels are also indicators of whether ORC is affecting groundwater chemistry and biological activity. Both should decrease in the presence of oxygen. However, in MW-14, both have increased since placement of the socks (BOD has increased from not detected at 5 mg/L to 7.6 mg/L and COD has increased from 21 mg/L to 33 mg/L). The baseline BOD/COD levels were higher at MW-32 than at MW-14, indicating a significant amount of 3DMe breakdown products moving downgradient toward MW-14. These amendment residuals appear to have overwhelmed any additional DO provided by the ORC.

Based on the results to date, AMEC cannot conclude definitively if the ORC application is impacting the bioremediation. While levels of cis-1,2-DCE and VC have decreased over time during the remedial injections, the levels prior to placement of the ORC socks and post placement of the ORC socks were not markedly different and, as shown in Appendix G, the trend has been downward since 2012, prior to ORC placement.

The filter socks are still present in MW-32. While the manufacturer estimates the life of the ORC is approximately 9-12 months, to evaluate if ORC is exhausted, a multi-faceted evaluation should be conducted. DO readings viewed alone can be misleading because the measure indicates the amount of DO in excess of what is being consumed by the available aerobic microbes. Contaminant concentrations should also be considered. Therefore, given the CVOC concentrations, it is recommended that the ORC filter socks be kept in MW-32 through at least one more round of groundwater sampling.

4.6 ANAEROBIC BIOAUGMENTATION - DHC PILOT TEST RESULTS

DHC microbes contained in BDI, the DHC mixture applied to the shallow zone in the area of MW-13, are proven to dechlorinate CVOCs during in situ bioremediation if the population is sustained or increased under the appropriate geochemical conditions. Specifically, BDI can be used to assist with dechlorination of intermediate compounds and provide complete dechlorination of TCE, so that it doesn't stall after breakdown of 1,2-dichloroethene (1,2-DCE). The injection wells close to MW-13 were selected as the pilot test area for injection of BDI because the well had already showed evidence of TCE breakdown, and had relatively low detections of TCE and cis-1,2-DCE, both about one order of magnitude above their respective Maximum Contaminant Levels (MCLs).

Chemical concentrations were used as the measure of success for the BDI application. Prior to application of the BDI in October 2013, TCE and cis-1,2-DCE were detected at 0.0096 mg/L and 0.19 mg/L respectively (above the MCLs of 0.005 mg/L and 0.07 mg/L).

After application of the BDI in May 2014, both TCE and cis-1,2-DCE dropped below their respective MCLs to 0.0029 mg/L and 0.016 mg/L respectively. In the case of VC, the baseline concentration in MW-13 was 0.031 mg/L, and the concentration increased to a maximum of 0.12 mg/L after the first injections. In May 2014, after the BDI application, the VC concentration in MW-13 was 0.013 mg/L, still above the MCL of 0.002 mg/L but three times lower than the baseline concentration.

Based on the results of the DHC pilot test, it appears that BDI may be effective to assist with continued dechlorination in the plume area, after the majority of bioremediation processes have progressed and in the event remediation stalls with low levels of CVOCs remaining in the shallow zone groundwater.

5.0 CONCLUSIONS

The effectiveness of the remedial treatments to date in the shallow groundwater zone have been discussed in the previous section in terms of concentration trends well-by-well (as illustrated by the graphs in **Appendix G**), within each of the three main treatment areas. The following broad conclusions can be drawn regarding the status of groundwater remediation in each of the treatment areas:

- In the primary source area treated with BOS 100 (where baseline concentrations of TCVOCs were greater than 50 mg/L), concentrations continue to remain low, with an overall reduction in TCE still at 97% below baseline conditions. The highest remaining concentrations in groundwater at the site (with TCVOCs greater than 10 mg/L) are at the edge (SW-2) or outside (MW-5) of the BOS 100 treatment area. However, despite less day-lighting of the BOS 100 and implementation of field methods to provide better distribution horizontally and vertically during the second injection, localized hot spots still persist with TCVOC concentrations exceeding 1 mg/L, as monitored by TW-6 and TW-13. Based on currently available information, therefore, it appears that available injection techniques cannot place sufficient BOS 100 into all contaminated depth intervals. It is also possible that residual product trapped in the shallow to mid-level bedrock below the level of injection in the treated zones may be contributing to localized rebounding. BOS 100 treatment is reaching the limitations of effectiveness in the source area due to both contact efficiency and sorption kinetics.

- In the secondary (or outer) source areas treated by biostimulation with 3DMe, where baseline concentrations of TCVOCs were between 10 and 50 mg/L, concentrations continue to remain low, with an overall reduction in TCE still at 97% below baseline conditions. Concentrations of CVOCs at MW-17, where a significant amount of injections occurred, are now all below the MCLs compared to a baseline TCVOC concentration of 23 mg/L. However, concentrations are increasing at MW-5, indicating possible residual product at depth in this area, as discussed in the previous paragraph.

- In the outer plume areas treated by biostimulation with 3DMe, where baseline concentrations of total CVOCs were below 10 mg/L, there is evidence that TCE is degrading and total CVOC concentrations are decreasing. Several wells which historically have had CVOCs above the MCLs now have no MCL exceedances, including MW-1, MW-4, MW-7, MW-10, MW-18 and MW-28. This indicates that biostimulation has been effective in the plume area, and the edges of the plume are shrinking. The exception is MW-21 where, despite evidence of breakdown after the first injection, TCE concentrations have returned to baseline concentrations and degradation compound concentrations are also increasing. Rebound in the area of MW-21 is most likely related to inflow of untreated groundwater from the residential properties to the south and southwest of that well.

Another way to evaluate the effectiveness of the shallow zone remediation is to measure changes in the areas represented by each band within the overall groundwater plume maps. It is important when making this assessment to take into consideration the changes in concentration of TCE (the parent compound) as well as the changes in

TCVOC concentrations. This is because degradation of TCE can temporarily cause an increase in the concentrations of daughter products, resulting in no changes, or even increases, in TCVOC concentrations. It is also important to note that there is significant inaccuracy in the areal estimates, since the accuracy of concentration mapping is limited by the number and location of the available monitoring points. Nevertheless, plume areas have decreased in response to the remedial injections, as illustrated by the TCVOC concentration maps for shallow groundwater in June 2013 and post-remediation included as **Figures 8 and 9**, and the TCE concentration maps included as **Figures 10 and 11**.

TCVOC concentration areas greater than 10 mg/L have decreased from 27,600 square feet (SF) pre -injection, to 15,100 SF after injection #1 and 700 SF after injection #2. This correlates to a 45% reduction after injection # 1 and a cumulative reduction of 97% after two injections.

TCVOC concentration areas greater than 1 mg/L have decreased from 91,000 SF pre-injection, to 55,000 SF after injection #1 and 67,000 SF after injection #2.

TCE concentration areas greater than 10 mg/L have decreased from 25,000 SF pre-injection, to 1,500 SF after injection #1 and 200 SF after injection #2. This correlates to a 94% reduction after injection # 1 and a cumulative reduction of 99% after two injections.

TCE concentration areas greater than 1 mg/L have decreased from 44,000 SF pre-injection, to 11,000 SF after injection #1 and 5,000 SF after injection #2. This correlates to a 75% reduction after injection # 1 and a cumulative reduction of 88% after two injections.

While remedial injections have been very effective at reducing the plume size overall, the plume extent and the concentrations of CVOCs, there remain areas where some rebound is apparently occurring. However, additional monitoring events are necessary to fully evaluate long-term trends, and additional monitoring is recommended prior to recommending additional investigations or amendments to the ongoing remediation. An additional monitoring event was conducted the week of August 25, 2014. and one more 2014 quarterly sampling event is tentatively scheduled for November 2014. The need for additional remedial actions, if any, will be evaluated after the monitoring events.

6.0 QUALIFICATIONS OF REPORT

Our report presents a summary of information known to AMEC concerning the project site which AMEC considered pertinent to the scope of work and stated project objective. AMEC has assembled data produced by itself and others and used that information to make analyses of site conditions. AMEC has performed this investigation with the care and skill ordinarily used by members of the environmental consulting profession practicing under similar conditions. The activities and evaluative approaches used in this assessment are consistent with those normally employed in environmental assessments and waste-management projects of this type. Our evaluation of site conditions is based on our understanding of the site and project information and the data obtained in our assessment. The general subsurface conditions utilized in our evaluation have been based on interpolation of subsurface data between the sampling locations. The conclusions presented herein are those that are deemed pertinent by AMEC based upon the assumed accuracy of the available information. No other warranty, expressed or implied, is made as to the professional advice included in this report. The information presented in this report is not intended for any use other than the stated objectives of the project.

TABLES

Table 1
Well Construction Summary - Permanent Monitoring Wells and Former Water Supply Wells
RBTC LDB #1, Leitchfield, Kentucky
AMEC Project 6251-12-1002

Well ID	KDOW AKGWA #	Completion Date	Inner Casing Diameter (in)	Boring Depth (ft BGS)	Sounded Well Depth (ft BMP)	Length of Perforated Section (ft)	Ground Surface Elevation (ft NAVD)	Measuring Point Elevation (ft NAVD)	Casing Stick-Up (ft AGS)	Top of Screen Elevation (ft NAVD)	Mid-Screen Elevation (ft NAVD)	Bottom of Well Elevation (ft NAVD)
Former Supply Wells												
PW-1	0002-0656	4/17/1987	8	367	334	154	724.4	725.58	1.15	513	436	359
PW-2	N/A	10/10/1974	6	527	440+	---	711.3	712.36	1.09	---	---	est. 236
Hack (offsite	N/A	N/A	6	---	37.4	---	---	---	est. 0	---	---	---
Kiper (offsite	N/A	N/A	6	---	80	---	---	---	est. 1	---	---	---
Monitoring Wells												
MW-1	8005-3213	3/21/2007	2	17.8	17.4	9.4	723.9	723.51	-0.4	715.5	710.8	706.1
MW-2	8005-3214	3/15/2007	2	17.8	17.4	9.4	711.4	710.98	-0.4	703.0	698.3	693.6
MW-2M	8005-6303	5/5/2009	2	41.0	40.6	10.0	711.4	710.93	-0.5	680.3	675.3	670.3
MW-3	8005-3215	3/14/2007	2	17.5	16.9	9.4	710.5	710.02	-0.5	702.5	697.8	693.1
MW-4	8005-3216	3/14/2007	2	14.5	13.8	7.0	709.5	709.10	-0.4	702.3	698.8	695.3
MW-5	8005-3217	3/14/2007	2	24.5	23.6	9.4	707.2	706.78	-0.4	692.6	687.9	683.2
MW-5M	8005-6304	5/6/2009	2	38.2	37.2	10.0	707.2	706.40	-0.8	679.3	674.3	669.3
MW-6	8005-3218	3/21/2007	2	10.0	9.6	4.8	704.1	703.66	-0.4	698.8	696.4	694.0
MW-7	8005-3219	3/15/2007	2	13.7	12.5	5.6	703.3	702.54	-0.7	695.6	692.8	690.0
MW-8	8005-3220	3/15/2007	2	20.0	19.0	9.4	709.1	708.66	-0.5	699.1	694.4	689.7
MW-8M	8005-6301	5/5/2009	2	39.6	39.4	10.0	709.5	708.87	-0.6	679.5	674.5	669.5
MW-9	8005-3705	5/27/2008	2	16.8	15.5	9.4	711.3	710.93	-0.4	704.8	700.1	695.4
MW-10	8005-3710	5/27/2008	2	9.3	9.1	4.8	711.3	710.95	-0.3	706.6	706.6	701.9
MW-11A	8005-3708	5/28/2008	2	15.0	14.8	4.8	711.4	710.97	-0.4	701.0	698.5	696.2
MW-11B	8005-3709	5/28/2008	2	8.8	8.5	4.5	711.4	711.01	-0.3	707.0	704.8	702.5
MW-12A	8005-3706	5/28/2008	2	15.5	15.5	4.5	711.3	710.96	-0.4	700.0	697.6	695.5
MW-12B	8005-3707	5/28/2008	2	9.0	8.9	4.5	711.3	710.85	-0.5	706.4	704.1	701.9
MW-13	8005-3721	6/2/2008	2	12.8	12.5	4.5	705.4	705.18	-0.2	697.2	695.0	692.7
MW-13M	8005-6302	5/5/2009	2	36.0	35.7	10.0	736.3	735.93	-0.4	680.2	675.2	670.2
MW-14	8005-3725	6/2/2008	2	14.5	14.0	9.4	706.4	706.05	-0.3	701.4	696.9	692.0
MW-15	8005-3729	6/2/2008	2	9.0	8.6	4.5	702.9	702.66	-0.3	698.6	696.3	694.1
MW-16	8005-3722	6/2/2008	2	14.0	12.7	9.7	707.4	706.74	-0.6	703.7	698.9	694.0
MW-17	8005-3726	6/2/2008	2	14.5	14.0	9.4	710.3	709.96	-0.3	705.4	700.7	696.0
MW-18	8005-3730	6/3/2008	2	7.0	6.6	2.8	711.7	711.13	-0.6	707.3	705.9	704.5
MW-19	8005-3723	6/2/2008	2	9.0	8.8	4.8	710.6	710.16	-0.4	706.1	703.7	701.3
MW-20	8005-3727	6/2/2008	2	12.5	11.7	4.8	712.0	711.30	-0.7	704.4	702.0	699.6
MW-21	8005-3724	6/2/2008	2	13.5	13.0	4.8	709.3	708.85	-0.4	700.7	698.2	695.9
MW-22	8005-4866	4/15/2009	2	13.0	12.6	5.0	710.4	710.14	-0.3	702.6	700.1	697.6
MW-23	8005-4867	4/15/2009	2	14.0	13.5	5.0	707.6	707.30	-0.3	698.8	696.4	693.8
MW-24	8005-4870	4/15/2009	2	13.0	12.8	5.0	705.9	705.65	-0.3	697.9	695.4	692.9
MW-25	8005-8218	1/11/2010	2	12.0	11.5	8.0	711.4	710.93	-0.5	707.4	703.4	699.4
MW-26	8005-8231	1/11/2010	2	13.5	12.8	9.0	711.2	710.87	-0.3	707.1	702.6	698.1
MW-27	8005-8217	1/12/2010	2	14.0	13.7	10.0	711.3	710.85	-0.4	707.2	702.2	697.2
MW-28	8005-8216	1/11/2010	2	14.0	13.8	10.0	709.1	708.83	-0.3	705.1	700.1	695.1
MW-29	8006-6750	6/5/2013	2	11.5	10.5	5.0	712.2	711.89	-0.3	706.4	703.9	701.4
MW-30	8006-6751	6/5/2013	2	11.5	10.5	5.0	710.4	710.12	-0.3	704.6	702.1	699.6
MW-31	8006-6752	6/5/2013	2	12.5	11.5	5.0	718.0	717.71	-0.3	711.3	708.8	706.3
MW-32	8006-8416	12/10/2013	2	16.0	16.0	10.0	706.5	706.11	-0.4	700.1	695.1	690.1

Notes

ft = feet in = inches est. = estimated

MP = measuring point BMP = below measuring point

GS = ground/floor surface BGS = below ground surface

WLE = water level elevation NAVD = North American Vertical Datum of 1988

--- = not available KDOW AKGWA # = well number assigned in the Kentucky Division of Water's Assembled Kentucky Groundwater Database

Elevations of certain have been remeasured and changed since a February 18, 2014 survey by Eberly

Prepared by SMD 4/15/2014

Checked by JAM 4/22/2014

Table 2
Well Construction Summary - Remediation Test Wells
RBTC LDB #1, Leitchfield, Kentucky
AMEC Project 6251-12-1002

Well ID	KDOW AKGWA #	Completion Date	Inner Casing Diameter (in)	Boring Depth (ft BGS)	Sounded Well Depth (ft BMP)	Length of Perforated Section (ft)	Approximate Ground Surface Elevation (ft NAVD)	Casing Relative to Ground Surface (ft)	Approximate Measuring Point Elevation (ft NAVD)	Approximate Bottom of Well Elevation (ft NAVD)	Approximate Top of Screen Elevation (ft NAVD)
TW-5	8006-2064	3/5/2012	3/4	13.3	12.48	5	711.2	-0.2	711.0	698.5	703.5
TW-6	8006-2065	3/5/2012	3/4	12.0	11.75	5	711.2	-0.3	711.0	699.2	704.2
TW-9	8006-2066	3/5/2012	3/4	11.5	11.30	5	711.2	-0.3	710.9	699.6	704.6
TW-10	8006-2067	3/5/2012	3/4	11.8	11.82	5	711.2	-0.3	710.9	699.1	704.1
TW-11	8006-2068	3/5/2012	3/4	17.1	17.09	5	711.2	-0.3	711.0	693.9	698.9
TW-12	8006-2063	3/5/2012	3/4	15.6	15.70	5	711.2	-0.1	711.1	695.4	700.4
TW-13	8006-2069	3/5/2012	3/4	15.8	15.81	5	711.2	-0.4	710.9	695.0	700.0
TW-14	8006-2070	3/5/2012	3/4	15.8	16.78	5	711.2	-0.2	711.0	694.2	699.2
SW-1	--	10/11/2012	3/4	15.0	13.50	7	711.2	-0.2	711.0	697.5	704.5
SW-2	--	10/4/2012	3/4	12.6	10.33	5	711.2	-0.3	710.9	700.6	705.6
SW-3	--	10/10/2012	3/4	12.6	10.96	5	711.2	-0.2	711.0	700.0	705.0
SW-4	--	10/10/2012	3/4	16.0	13.50	8	711.2	-0.4	710.8	697.3	705.3
TW-16	8006-8418	12/10/2013	3/4	16.0	15.09	10	709.4	-0.2	709.2	694.1	704.1
TW-17	8006-8417	12/10/2013	3/4	16.0	15.56	10	709.4	-0.3	709.1	693.6	703.6
TW-18	8002-3162	1/7/2014	3/4	12.0	11.35	5	711.2	-0.2	711.0	699.6	704.6
TW-19	8002-3163	1/7/2014	3/4	12.4	11.74	5	711.2	-0.2	711.0	699.2	704.2

Prepared by: JAM 3/7/2014
Checked by: SMD 4/11/2014

Notes
ft = feet in = inches
MP = measuring point
GS = ground/floor surface
WLE = water level elevation
BMP = below measuring point
BGS = below ground surface
NAVD = North American Vertical Datum of 1988
KDOW AKGWA # = well number assigned in the Kentucky Division of Water's Assembled Kentucky Groundwater Database
Ground surface elevations were estimated from "Site Survey" drawing, dated May 14, 2009, provided by Endris Engineering.
Ground surface elevations are approximate.

Table 3
Water Level Data Summary
RBTC LDB #1, Leitchfield, Kentucky
AMEC Project No. 6251-12-1002

Field ID	PW-1	PW-2	Kiper Well	Hack Well	WWTP-A	WWTP-C	Stand-Pipe	MW-1	MW-2	MW-2M	MW-3	MW-4	MW-5	MW-5M	MW-6	MW-7	MW-8	MW-8M	MW-9	MW-10
Measuring Point Elevation (ft NAVD)	726.58	742.96	713	718	710.4	710.3	711.73	723.51	710.98	710.93	710.02	709.10	706.78	706.40	703.66	702.54	708.71	708.67	710.91	710.95
Measuring Point Elevation (ft NAVD) Feb 2014 - corrected																	708.68		710.93	
Depth to Water (ft BMP)																				
1/13/07	28.55																			
3/14/07	--	53.27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3/22/07								1.85	3.71		2.70	3.95	4.42		2.74	2.80	4.82			
4/18/07	21.95	53.21					3.20	5.31	2.98		1.94	4.04	1.82		3.12	2.23	4.90			
5/13/08					5.85	5.62	4.63	4.56	3.81		2.87	4.52	4.37		3.03	2.87	4.63			
5/19/08					5.83	5.78	3.06	3.55	3.63		2.48	4.44	4.09		3.06	2.71	4.53			
5/21/08	--	--	--	--	5.86	5.80	3.05	3.94	3.70	--	2.58	4.50	4.25	--	3.31	2.95	4.64			
5/30/08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.16	3.50
6/3/08					5.81	5.87	3.06	3.74	3.03		1.91	4.43	3.97		3.15	1.98	4.51		5.95	2.75
6/4/08	--	--	--	--	--	--	--	--	2.97	--	1.97	4.44	--	--	--	--	--	--	--	--
6/5/08	--	--	--	--	--	--	--	--	--	--	--	--	3.86	--	3.33	2.23	4.70	--	--	--
6/6/08	--	--	--	--	--	--	--	4.38	--	--	--	--	--	--	--	--	--	--	--	2.78
6/9/08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6/12/08																			6.33	2.17
6/13/08					--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6/16/08					--	--	--	11.81	3.20	--	2.19	4.48	3.67	--	3.46	2.40	4.82	--	--	--
6/18/08	21.14	55.38	--	--	5.84	5.75	3.11	11.72	3.25	--	2.16	4.54	3.78	--	3.55	2.51	4.98	--	6.39	2.25
6/19/08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3/25/09								6.40	3.28		2.15	4.24	3.77		3.18	2.27	4.67		6.23	2.21
3/30/09	--	--	--	--	--	--	--	5.09	3.14		2.04	4.56	3.43	--	2.58	1.59	4.35	--	5.94	2.21
5/18/09	--	--	--	--	--	--	3.06	3.94	2.17	6.93	1.24	4.55	3.22	4.77	2.66	1.67	4.22	30.57	5.79	1.66
7/1/09	20.50	53.02	--	--	--	--	3.11	5.64	2.76	8.18	1.82	4.50	3.63	6.26	3.38	2.51	4.24	10.85	5.98	2.10
W24/09	21.93	55.92	--	--	--	--	--	7.34	3.47	9.58	--	--	--	--	--	--	--	--	--	2.34
W28/09 8:30	21.45						3.07	5.91	3.09	7.85	2.10	4.52	4.00	7.76	3.43	2.58	4.49	10.61	6.18	2.25
9/28/09 13:45								6.99	3.08	7.80	2.09	4.51	4.00	7.14						2.32
9/29/09	21.70	--	--	--	--	--	--	7.26	3.29	8.86	2.30	4.81	4.37	7.24	--	--	--	--	--	2.34
9/30/09	21.82							7.39	3.41	9.15	2.42	4.85	4.56	7.64						2.40
10/2/09	21.52							8.01	3.28	9.79	2.26	4.92	4.56	8.02						2.27
10/5/09	21.64							8.35	3.36	9.51	2.31	4.95	4.65	6.36						2.24
10/9/09	21.54							8.67	3.54	8.45	1.87	4.20	4.15	7.07						1.87
10/13/09	21.81	79.31					2.96	4.45	3.58	8.89	2.37	4.62	4.33	7.18	2.99	2.88	4.61	10.41	6.23	1.79
10/16/09	21.96							3.31	3.25	9.18	2.23	4.54	4.06	7.19						1.75
10/20/09	22.58	--	--	--	--	--	--	4.95	3.57	9.62	2.53	4.69	4.43	7.36	--	--	--	--	--	1.95
10/26/09 10:30	22.91							5.00	3.57	9.00	2.55	4.70	4.06	7.03						2.00
10/26/09 14:00								5.00	3.54	8.95										2.17
10/29/09	22.80	--	--	--	--	--	--	3.12	3.44	8.30	2.46	4.62	3.96	6.25	--	--	--	--	--	2.16
2/6/12								2.66	2.71	7.20	2.76	3.57	3.86	6.81	2.92	2.15	4.65	10.08	6.18	2.80
3/5/12								10.25	2.91	7.27	1.93	3.61	4.93	6.33	2.70	2.25	4.75	9.59	6.29	1.22
3/8/12																				
4/30/12																				
5/1/12	--	--	--	16.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5/2/12								11.92	3.29	8.51	2.45	4.05	4.62	6.86	3.72	3.45	5.11	9.60	6.36	1.36
6/12/12	22.82	53.84	6.37	11.34				11.48	2.80	7.13	1.85	4.07	3.88	6.68	3.65	2.59	4.92	9.51	6.12	1.26
6/20/12	22.88	54.04	--	--				11.76	3.21	7.77	2.44	4.41	4.33	6.77	3.68	3.18	5.19	9.76	6.31	1.70
7/19/12	22.62	53.95	--	--				11.79	2.89	7.67	1.47	4.27	3.96	6.71	2.97	3.01	5.06	9.21	6.27	2.17
12/15/12	23.07	58.09	8.03	--	--	--	--	11.65	3.22	7.09	1.92	2.49	3.65	6.68	1.32	2.05	6.12	9.34	4.95	3.59
1/7/13	--	--	--	--	--	--	--	10.82	2.71	7.19	1.58	4.26	3.56	6.78	2.79	2.30	5.00	11.61	5.98	4.04
1/15/13												4.19				2.40				4.47
2/11/13								5.86	2.19	6.46	1.12	3.00	3.21	6.31	1.88	1.76	5.44	10.76	5.58	0.98
2/12/13	22.92	53.15	9.13					7.27	2.35	6.81	2.12	2.93	3.21			1.79	5.44		6.03	
2/13/13																				0.80
6/17/13	22.71	53.27	8.99					8.64	2.21	6.83	2.38	2.83	3.23	5.85	2.70	2.92	4.11	12.86	4.98	5.48
7/16/13 9:50																				
10/7/13													3.79				4.46			
12/3/13	20.73	52.01	5.72					7.27	2.34	6.95	1.27	4.25	8.58	9.81	3.18	2.25	9.00	14.18	5.76	1.31
12/4/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/11/13																				
12/13/13																				
1/15/14																				
1/16/14																	5.88			
2/7/14																	5.54			
2/6/14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2/7/14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4/29/14	23.03	47.74	5.51		--	--	--	0.34	3.91	9.91	2.51	3.98	4.15	7.02	1.79	2.03	3.86	10.04	5.10	1.12
5/16/14								2.38	4.12	9.63	3.01	4.56	6.26	8.32	3.11	2.80	9.41	9.57	5.32	1.95
5/22/14	21.47	47.94	6.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

DTW - Depth to Water
MWT - Warm Line IT Water
-- - No Data Available
NAVD - North American Vertical Datum of 1988

Table 3
Water Level Data Summary
RBTC LDB #1, Leitchfield, Kentucky
AMEC Project No. 6251-12-1002

Field ID	MW-11A	MW-11B	MW-12A	MW-12B	MW-13	MW-13M	MW-14	MW-15	MW-16	MW-17	MW-18	MW-19	MW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	MW-27
Measuring Point Elevation (ft NAVD)	710.87	710.87	710.89	710.76	705.19	705.93	706.25	702.69	706.74	709.96	711.13	710.16	711.10	708.86	710.14	707.32	705.69	710.93	710.87	710.85
Measuring Point Elevation (ft NAVD) Feb 2014 - corrected	710.97	711.21	710.96	710.85	705.18		706.25							708.84		707.35				
Depth to Water (ft BMP)																				
5/13/07																				
5/14/07																				
5/22/07																				
4/16/07																				
5/13/08																				
5/19/08																				
5/21/08																				
5/30/08	3.57	3.61	3.63	4.33																
6/3/08	3.34	3.48	3.53	4.07																
6/4/08					2.95		2.90	3.08	2.94	13.23	5.85	8.52	4.43	11.92						
6/5/08																				
6/6/08	3.58	3.56	3.81	4.19																
6/9/08					2.97		3.28	2.82	2.78	6.27	2.81	8.46	2.67	8.21						
6/10/08			3.89	4.18																
6/11/08										4.89	2.47	8.25	2.68	11.07						
6/16/08																				
6/18/08	3.71	3.50	3.98	4.17	3.07		3.30	2.90	2.89	3.01	2.40	8.16	2.88	7.24						
6/19/08			4.08	4.19	3.14		3.37	2.96	2.94	2.91	2.35	8.01	2.97	6.81						
3/25/09	3.66	3.66	3.97	4.24	3.01		2.24	2.04	2.04	2.32	2.06	7.11	2.72	2.81						
3/30/09	3.58	3.77	3.77	4.25	2.55		2.62	0.71	2.15	2.48	2.06	7.02	2.66	2.71						
5/18/09	3.10	3.22	3.38	3.95	2.32	5.61	2.67	1.48	2.28	2.44	1.88	0.40	1.56	2.69	4.73	2.04	2.47			
7/1/09	3.28	2.99	3.53	3.88	2.52	6.31	2.74	2.73	2.56	2.50	1.47	1.24	2.46	2.04	2.93	2.27	1.91			
9/24/09											1.71									
9/28/09 8:30	3.78	3.68	4.17	4.47	2.89	6.25	2.71	2.77	2.41	2.51	2.16	0.46	2.72	2.39	3.67	2.40	1.47			
9/28/09 13:45	3.77	3.71	4.18	4.47						2.51	2.31	0.40	2.96		3.76					
9/29/09	3.94	3.81	4.31	4.54						2.55	2.27	0.63	3.02		3.87					
9/30/09	4.03	3.86	4.40	4.57						2.59	2.31	0.61	3.08		3.97					
10/2/09	3.86	3.67	4.26	4.45						2.59	2.25	0.43	3.07		3.86					
10/5/09	3.92	3.76	4.31	4.49						1.95	2.16	0.50	2.99		3.87					
10/9/09	3.65	3.75	4.02	4.47						2.28	1.78	0.50	2.73		3.58					
10/13/09	3.65	3.90	3.99	4.42	3.04	6.14	2.83	1.83	2.21	2.51	1.60	0.67	2.48	2.61	3.41	2.69	1.21			
10/16/09	3.54	3.80	3.82	4.45						2.51	1.56	0.70	2.36		3.18					
10/20/09	3.77	3.84	4.01	4.49						2.53	1.94	0.66	2.39		3.35					
10/26/09 10:30	3.76	3.92	3.99	4.51						2.53	1.89	1.01	2.45		3.33					
10/26/09 14:00											2.10									
10/28/09	3.65	3.86	3.87	4.47						2.48	2.11	1.04	2.63		3.19					
2/6/12	3.22	3.52	3.65	4.31	2.52	5.87	2.87	0.68	2.16	2.40	0.92	1.41	2.31	3.07	2.71	2.62	1.79	3.04	3.72	5.65
3/5/12	3.49	3.63	4.02	4.35	2.52	6.07	2.90	1.44	2.73	2.50	1.15	5.38	1.73	8.52	3.03	2.70	0.94	3.13	3.71	5.73
3/8/12																				
4/30/12														7.25	3.44					
5/1/12																				
5/2/12	3.81	3.42	4.19	4.35	2.99	7.32	3.33	3.35	2.56	3.51	1.46	4.64	2.07	5.62	3.56	2.82	1.01	3.42	3.89	5.72
6/12/12	3.44	3.76	3.85	3.89	2.98	6.71	3.25	2.99	2.61	2.51	1.22	0.81	1.78	3.01	3.25	2.61	1.17	2.37	3.48	5.37
8/20/12	4.24	3.76	4.69	4.73	3.01	7.27	3.28	3.18	2.83	2.78	1.41	1.17	1.98	3.22	3.41	2.78	1.19	3.19	3.67	5.58
11/5/12	3.91	3.85	3.92	3.91	2.87	7.19	3.39	3.27	2.57	2.71	0.97	1.08	2.17	2.97	3.17	2.73	1.03	2.51	3.96	5.61
12/10/12	3.61	3.43	3.64	3.91	2.48	6.57	2.31	0.10	2.58	1.89	0.49	0.66	2.74	3.91	4.29	2.72	1.04	2.96	3.48	4.79
1/7/13	3.31	3.31	3.82	3.86	3.34	6.56	3.34	1.99	2.40	2.25	1.04	3.20	2.10	8.42	6.12	2.75	1.31	2.69	3.87	5.55
1/15/13					3.23										5.76					
2/11/13	2.78	2.74	3.38	3.52	1.57	5.91	2.96	1.04	1.63	2.01	0.89	2.44	1.47	5.49	2.54	2.18	0.66	2.15	2.84	4.71
2/12/13	3.92	3.60	3.96	4.25				2.29		1.95	0.60	3.21		8.42	2.54					
2/13/13																				
6/17/13	2.39	2.39	3.07	3.30	8.50	6.61	3.34	2.41	2.61	2.16	1.76	0.28	1.41	9.36	7.72	1.77	0.78	2.87	3.08	4.71
7/16/13 9:50														2.73	5.64			1.96	2.67	4.45
10/7/13					2.91									9.80	3.33	2.12				
12/3/13	2.88	2.87	3.48	3.94	4.43	5.99	3.34	2.18	2.33	3.07	0.89		1.57	2.60	6.41	2.37	0.98	2.28	2.38	4.66
12/4/13																				
12/11/13																				
12/13/13																				
1/15/14																				
1/18/14																				
1/17/14							3.01											2.11		
2/6/14	2.68	2.66																		
2/7/14	2.69	2.70																2.25		
4/29/14	3.08	2.84	3.47	3.79	5.54	6.67	2.41	0.57	1.98	2.17	0.70	4.30	1.51	9.44	2.96	1.97	0.82	2.27		
5/19/14	3.34	3.16	3.46	3.76	3.80	6.42	3.07	1.67	2.44	2.34	0.94	1.77	1.71	10.43	2.98	2.08	1.23	2.68	2.14	3.14	4.06
5/22/14																			3.38	4.34

DTW - Depth to Water
WLE - Water Level Elevation
--- - No Data Available
NAVD - North American Vertical Datum of 1988

Table 3
Water Level Data Summary
RBTC LDB #1, Leitchfield, Kentucky
AMEC Project No. 6251-12-1002

Field ID	MW-28	MW-29	MW-30	MW-31	MW-32	TW-5	TW-6	TW-9	TW-10	TW-11	TW-12	TW-13	TW-14	TW-16	TW-17	TW-18	TW-19	SW-1	SW-2	SW-3	SW-4
Measuring Point Elevation (ft NAVD)	708.83	711.83	710.12	717.71	708.11	711.0	711.0	710.9	710.9	711.0	711.1	710.9	711.0	709.17	709.12	710.97	710.95	711.0	710.9	711.0	710.8
Measuring Point Elevation (ft NAVD) Feb 2014 - corrected					708.11									709.17	709.12	710.97	710.95				
Depth to Water (ft BMP)																					
3/13/07																					
3/14/07																					
3/22/07																					
4/16/07																					
5/13/08																					
5/19/08																					
5/21/08																					
5/30/08																					
6/3/08																					
6/4/08																					
6/5/08																					
6/6/08																					
6/9/08																					
6/10/08																					
6/11/08																					
6/16/08																					
6/18/08																					
6/19/08																					
3/25/09																					
9/30/09																					
9/16/09																					
7/1/09																					
9/24/09																					
9/28/09 8:30																					
9/28/09 13:45																					
9/29/09																					
9/30/09																					
10/2/09																					
10/5/09																					
10/6/09																					
10/13/09																					
10/16/09																					
10/26/09																					
10/26/09 10:30																					
10/26/09 14:00																					
10/28/09																					
2/6/12	4.67																				
3/5/12	4.59																				
3/8/12						12.89	2.85	DRY	5.92	5.26	3.78	DRY	5.45								
4/30/12																					
5/1/12																					
5/2/12	4.96					5.37	3.00	3.03	3.59	4.19	4.23	5.28	6.67								
6/12/12	4.94					1.90	4.67	2.66	3.14	3.81	3.89	5.04	5.47								
6/20/12	4.98					2.51	3.21	3.30	3.74	4.46	4.91	5.37	6.68								
11/5/12	4.47					2.05	2.56	3.07	3.42	4.06	3.95	4.41	4.78					3.77	3.79	3.05	2.65
12/10/12	3.58					3.73	2.99	3.05	3.74	3.75	4.03	4.82	4.87								
1/7/13	5.19					2.38	2.70	2.74	3.48	3.39	3.82	4.86	5.32								
1/15/13																					
2/11/13	4.17					1.90	2.17	2.22	2.67	2.92	3.46	4.53	4.89								
2/12/13																					
2/15/13								2.21			3.26	4.50	4.87								
6/17/13	4.90	DRY	4.27	DRY		1.58	2.01	2.00	2.46	2.64	3.19	4.17	4.45								
7/10/13 9:50		7.84	3.82	DRY																	
10/7/13																				2.31	2.39
12/3/13	5.15	8.22	3.17	9.15		2.00	2.44	2.32	2.70		3.61	4.43	4.90					3.23	2.91	2.45	2.74
12/4/13										2.94											
12/11/13														3.73	3.42						
12/13/13					3.04																
1/15/14														3.64	3.52						
1/16/14														3.45	2.83						
1/17/14					2.98											3.19	9.25				
2/6/14							2.43		2.66			4.28									
2/7/14							2.45		2.81												
4/29/14	4.49	3.58	3.26	0.00		3.21	2.42	2.39	3.16	3.19	3.64	4.27	4.78	4.04	3.11	2.68	7.82			2.66	2.27
5/19/14	5.07	3.57	3.30	0.67		2.48	2.89	2.88	3.43	3.38	3.85	4.31	4.47	3.74	3.44	2.90	2.10	3.34	2.67	2.87	2.70
5/22/14																					

DTW - Depth to Water
MP - Water Level Elevation
-- No Data Available
NAVD - North American Vertical Datum of 1988

Table 3
Water Level Data Summary
RBTC LDB #1, Leitchfield, Kentucky
AMEC Project No. 6251-12-1002

Field ID	PW-1	PW-2	Kiper Well	Hack Well	WWTP-A	WWTP-C	Stand-Pipe	MW-1	MW-2	MW-2M	MW-3	MW-4	MW-5	MW-5M	MW-6	MW-7	MW-8	MW-8M	MW-9	MW-10
Measuring Point Elevation (ft NAVD)	725.58	712.36	713	718	710.4	710.3	711.73	723.51	710.98	710.83	710.02	709.10	706.78	706.40	703.66	702.54	708.71	708.87	710.91	710.95
Measuring Point Elevation (ft NAVD) Feb 2014 - corrected																	708.68		710.93	
Water Level Elevation (ft NAVD)																				
3/1/07	697.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3/14/07	--	699.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3/22/07	--	--	--	--	--	--	--	721.66	707.26	--	707.28	705.13	702.36	--	700.92	699.74	703.89	--	--	--
4/18/07	703.83	699.15	--	--	--	--	708.53	718.20	708.00	--	708.08	705.09	702.98	--	700.54	700.31	703.81	--	--	--
5/13/08	--	--	--	--	704.55	704.48	707.10	719.01	707.17	--	707.35	704.98	702.41	--	700.63	699.47	704.06	--	--	--
5/19/08	--	--	--	--	704.57	704.52	708.67	719.96	707.35	--	707.54	704.98	702.69	--	700.60	699.83	704.16	--	--	--
5/21/08	--	--	--	--	704.54	704.50	708.68	719.57	707.28	--	707.44	704.90	702.53	--	700.35	699.59	704.07	--	--	--
5/30/08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	704.73	707.45
6/3/08	--	--	--	--	704.59	704.43	708.67	719.77	707.95	--	708.11	704.67	703.27	--	700.61	700.56	704.20	--	704.98	708.80
6/4/08	--	--	--	--	--	--	--	--	708.01	--	708.05	704.66	--	--	--	--	--	--	--	--
6/5/08	--	--	--	--	--	--	--	--	--	--	--	--	703.12	--	700.33	700.31	704.01	--	--	--
6/9/08	--	--	--	--	--	--	--	719.13	--	--	--	--	--	--	--	--	--	--	--	708.77
6/9/08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6/10/08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	704.98	708.78
6/11/08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6/16/08	--	--	--	--	--	--	--	711.90	707.78	--	707.83	704.62	703.11	--	700.20	700.14	703.86	--	--	--
6/18/08	704.44	699.98	--	--	704.56	704.55	708.62	711.79	707.73	--	707.88	704.56	703.00	--	700.11	700.03	703.73	--	704.62	708.70
6/19/08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3/25/09	--	--	--	--	--	--	--	717.11	707.70	--	707.87	704.86	703.01	--	700.48	700.27	704.04	--	704.68	708.74
3/30/09	--	--	--	--	--	--	--	718.42	707.64	--	707.98	704.45	703.36	--	701.08	700.95	704.36	--	704.97	708.74
5/18/09	--	--	--	--	--	--	708.67	719.57	708.81	704.00	708.78	704.55	703.56	751.83	701.00	700.87	704.49	478.30	705.21	709.90
7/1/09	705.58	699.34	--	--	--	--	708.62	717.87	708.22	702.75	708.23	704.60	703.15	700.14	700.28	700.03	704.47	698.02	705.25	708.85
9/24/09	703.65	696.44	--	--	--	--	--	716.17	707.51	701.35	--	--	--	--	--	--	--	--	--	708.61
9/28/09 8:30	704.13	--	--	--	--	--	708.66	716.60	707.89	703.08	707.92	704.58	702.78	698.65	700.23	699.98	704.22	698.26	704.73	708.75
9/28/09 13:45	--	--	--	--	--	--	--	716.52	707.90	703.07	707.93	704.59	702.78	699.26	--	--	--	--	--	708.63
9/29/09	703.66	--	--	--	--	--	--	716.25	707.69	702.07	707.72	704.49	702.41	699.18	--	--	--	--	--	708.61
9/30/09	703.76	--	--	--	--	--	--	716.12	707.57	701.78	707.60	704.45	702.20	698.76	--	--	--	--	--	708.55
10/2/09	704.06	--	--	--	--	--	--	715.50	707.70	701.94	707.78	704.78	702.23	698.58	--	--	--	--	--	708.68
10/6/09	703.94	--	--	--	--	--	--	715.16	707.62	701.42	707.71	704.75	702.13	700.04	--	--	--	--	--	708.71
10/9/09	704.04	--	--	--	--	--	--	722.84	707.94	702.48	708.05	704.90	702.63	699.33	--	--	--	--	--	709.09
10/13/09	703.77	693.05	--	--	--	--	708.77	719.06	707.90	702.04	707.95	704.48	702.45	699.22	700.67	699.69	704.10	698.46	704.68	708.16
10/16/09	703.62	--	--	--	--	--	--	720.26	707.73	701.76	707.79	704.66	702.70	699.27	--	--	--	--	--	709.25
10/20/09	703.00	--	--	--	--	--	--	718.96	707.47	701.11	707.49	704.41	702.35	699.05	--	--	--	--	--	709.05
10/26/09 10:30	702.67	--	--	--	--	--	--	718.51	707.41	701.93	707.47	704.40	702.73	699.37	--	--	--	--	--	708.95
10/26/09 14:00	--	--	--	--	--	--	--	718.51	707.44	701.98	--	--	--	--	--	--	--	--	--	708.78
10/28/09	702.78	--	--	--	--	--	--	720.39	707.54	702.63	707.56	704.58	703.12	700.15	--	--	--	--	--	708.80
2/9/12	--	--	--	--	--	--	--	720.85	708.27	703.73	707.28	705.53	702.92	699.59	700.74	700.33	704.08	698.79	704.75	708.10
3/5/12	--	--	--	--	--	--	--	713.26	708.07	703.66	708.09	705.49	701.85	700.05	700.96	700.34	703.98	699.28	704.62	709.73
3/8/12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4/30/12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5/1/12	--	--	--	721.83	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5/2/12	--	--	--	--	--	--	--	711.59	707.69	702.42	707.57	705.05	702.16	699.54	699.94	699.69	703.60	699.27	704.35	708.60
6/12/12	702.76	658.52	706.63	706.98	--	--	--	712.03	708.18	703.82	708.17	705.53	702.90	699.72	700.01	699.95	703.79	699.96	704.79	709.69
8/20/12	702.75	658.32	--	--	--	--	--	711.75	707.77	703.18	707.58	704.89	702.45	699.63	699.98	699.38	703.62	699.11	704.60	709.25
11/6/12	702.96	658.41	--	--	--	--	--	712.12	708.09	703.26	708.55	704.83	702.82	699.69	700.69	699.53	703.65	699.66	704.64	708.78
12/10/12	702.51	664.27	704.97	--	--	--	--	711.86	707.76	703.87	708.10	706.61	703.13	699.72	702.34	700.49	702.39	699.52	705.96	707.36
1/7/13	--	--	--	--	--	--	--	712.69	708.27	703.74	708.44	704.84	703.20	699.62	700.87	700.24	703.71	697.26	704.93	706.01
1/15/13	--	--	--	--	--	--	--	--	--	--	--	704.91	--	--	--	700.08	--	--	--	706.48
2/11/13	--	--	--	--	--	--	--	717.65	708.79	704.47	708.90	706.10	703.57	700.09	701.78	700.78	703.27	694.11	705.33	709.97
2/12/13	702.66	659.21	703.90	--	--	--	--	716.24	708.63	704.12	707.90	706.17	703.57	--	--	700.75	703.27	--	704.88	--
2/13/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	710.15
6/17/13	702.87	659.09	704.51	--	--	--	--	714.87	708.77	704.10	707.64	706.27	703.50	700.55	700.96	699.62	704.00	696.01	705.93	709.47
7/16/13 9:50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	704.25	--	--	--
10/7/13	--	--	--	--	--	--	--	--	--	--	--	--	702.99	--	--	--	--	--	--	--
12/3/13	704.86	660.33	707.30	--	--	--	--	716.24	708.64	703.98	708.75	704.85	698.20	699.59	700.48	700.29	699.71	694.69	705.15	709.64
12/4/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/11/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/13/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/15/14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	702.83	--	--	--
1/16/14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	703.17	--	--	--
1/17/14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2/6/14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2/7/14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4/29/14	702.56	664.62	707.49	--	--	--	--	723.17	707.07	701.02	707.51	705.74	702.63	699.38	701.87	700.51	704.82	698.83	705.83	709.83
5/19/14	--	--	--	--	--	--	--	721.13	706.86	701.30	707.01	704.54	700.52	700.08	700.55	699.74	699.27	699.30	705.61	709.60
5/22/14	704.11	664.42	706.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

DTW - Depth to Water
WLE - Water Level Elevation
-- No Data Available
NAVD (North American Vertical Datum of 1988)

Table 3
Water Level Data Summary
RBTC LDB #1, Leitchfield, Kentucky
AMEC Project No. 6251-12-1002

Field ID	MW-11A	MW-11B	MW-12A	MW-12B	MW-13	MW-13M	MW-14	MW-15	MW-16	MW-17	MW-18	MW-19	MW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	MW-27
Measuring Point Elevation (ft NAVD)	710.87	710.87	710.89	710.76	705.19	705.93	706.25	702.66	706.74	709.96	711.13	710.18	711.30	708.88	710.14	707.32	704.65	712.93	712.87	710.86
Measuring Point Elevation (ft NAVD) Feb 2014 - corrected	710.97	711.01	710.98	710.85	705.18		706.05							708.88		707.30				
Water Level Elevation (ft NAVD)																				
3/13/07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3/14/07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3/22/07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4/18/07																				
5/13/08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5/19/08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5/21/08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5/30/08	707.30	707.06	707.06	706.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6/3/08	707.53	707.39	707.36	706.89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6/4/08	--	--	--	--	702.24	--	703.29	699.58	703.80	699.73	705.28	701.64	706.87	696.94	--	--	--	--	--	--
6/5/08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6/6/08	707.29	707.31	707.08	706.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6/9/08	--	--	--	--	702.22	--	702.97	699.84	703.96	703.69	708.32	701.76	708.63	700.65	--	--	--	--	--	--
6/10/08			707.00	706.58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6/11/08	--	--	--	--	--	--	--	--	--	705.10	708.72	701.91	708.62	697.79	--	--	--	--	--	--
6/16/08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6/18/08	707.18	707.37	706.91	706.59	702.12	--	702.95	699.76	703.85	706.95	708.73	702.00	708.42	701.62	--	--	--	--	--	--
6/19/08	--	--	706.81	706.57	702.05	--	702.88	699.72	703.80	707.05	708.80	702.15	708.33	702.23	--	--	--	--	--	--
3/25/09	707.27	707.21	706.98	706.62	702.18	--	704.01	700.62	704.70	707.64	709.07	709.05	708.58	708.05	--	--	--	--	--	--
3/30/09	707.20	707.10	707.12	706.51	702.64	--	703.63	701.96	704.59	707.48	709.07	709.14	708.65	706.15	--	--	--	--	--	--
5/1/09	707.77	707.66	707.53	706.81	702.87	700.32	703.64	701.18	704.46	707.52	709.25	709.76	709.75	706.17	705.41	705.28	703.18	--	--	--
7/1/09	707.59	707.88	707.38	706.88	702.67	699.62	703.57	699.93	704.19	707.46	709.66	709.92	708.84	706.82	707.21	706.05	703.74	--	--	--
9/24/09											709.42									
9/28/09 8:30	707.09	707.19	706.72	706.29	702.33	699.68	703.54	699.89	704.33	707.45	708.97	709.78	708.53	706.47	706.47	704.72	704.38	--	--	--
9/28/09 13:45	707.10	707.16	706.71	706.29	--	--	--	--	--	707.45	708.82	709.76	708.34	--	706.38	--	--	--	--	--
9/29/09	706.93	707.06	706.58	706.22	--	--	--	--	--	707.41	708.86	709.53	708.28	--	706.27	--	--	--	--	--
9/30/09	706.84	707.02	706.49	706.19	--	--	--	--	--	707.37	708.82	709.85	708.22	--	706.17	--	--	--	--	--
10/2/09	707.01	707.20	706.63	706.31	--	--	--	--	--	707.57	708.88	709.73	708.23	--	706.28	--	--	--	--	--
10/5/09	706.96	707.11	706.56	706.27	--	--	--	--	--	708.01	708.97	709.66	708.31	--	706.27	--	--	--	--	--
10/9/09	707.22	707.12	706.87	706.29	--	--	--	--	--	707.68	709.35	709.66	708.57	--	706.56	--	--	--	--	--
10/13/09	707.22	706.97	706.90	706.24	702.15	699.79	703.32	700.83	704.53	707.45	709.53	709.49	708.62	706.25	706.73	704.63	704.44	--	--	--
10/16/09	707.33	707.07	707.07	706.31	--	--	--	--	--	707.45	709.57	709.48	708.95	--	706.96	--	--	--	--	--
10/20/09	707.10	706.99	706.68	706.27	--	--	--	--	--	707.43	709.29	709.32	708.91	--	706.79	--	--	--	--	--
10/26/09 10:30	707.11	706.95	706.90	706.25	--	--	--	--	--	707.43	709.24	709.15	708.85	--	706.81	--	--	--	--	--
10/26/09 14:00					--	--	--	--	--		709.03									
10/28/09	707.22	707.01	707.02	706.29	--	--	--	--	--	707.48	709.02	709.12	708.67	--	706.95	--	--	--	--	--
2/6/12	707.65	707.36	707.24	706.45	702.67	700.06	703.38	701.98	704.56	707.56	710.21	708.75	708.99	705.79	707.43	704.70	704.26	707.89	707.16	705.20
3/5/12	707.38	707.24	706.97	706.41	702.67	699.86	703.35	701.22	704.61	707.46	709.98	708.78	709.57	705.34	707.11	704.62	704.66	707.80	707.16	705.12
3/8/12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4/30/12														703.61	706.70					
5/1/12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5/2/12	707.06	707.45	706.70	706.41	702.20	698.67	702.99	699.31	704.18	706.45	709.87	705.52	709.23	704.24	706.58	704.50	704.64	707.01	707.01	705.13
6/12/12	707.43	707.72	707.04	706.87	702.21	699.22	702.99	699.67	704.13	707.45	709.91	709.35	709.54	705.85	706.89	704.71	704.54	708.56	707.39	705.48
8/20/12	706.63	707.11	706.20	706.03	702.18	698.66	702.99	699.48	704.11	707.18	709.72	708.99	709.34	705.64	706.73	704.56	704.46	707.74	707.26	705.27
11/6/12	707.96	708.02	706.97	706.95	702.32	698.74	702.86	699.39	704.17	707.25	710.16	709.10	709.13	705.89	706.97	704.59	704.82	708.42	706.91	705.64
12/10/12	707.26	707.44	706.99	706.85	702.71	699.36	703.94	702.56	705.76	708.07	710.64	709.51	708.56	698.95	705.85	704.60	704.61	708.03	707.41	706.09
1/7/13	707.56	707.66	707.07	706.90	701.85	699.37	702.91	700.67	704.34	707.71	710.09	709.96	709.20	699.44	704.62	704.57	704.34	708.24	707.06	705.70
1/15/13					701.98									--	704.38					
2/11/13	708.09	708.13	707.51	707.24	703.62	700.02	703.29	701.62	705.09	707.95	710.24	707.72	709.83	703.37	707.60	705.74	704.99	708.83	708.03	706.14
2/12/13	706.96	707.27	706.93	706.51	--	--	--	700.37	--	708.06	710.53	706.95	--	700.44	707.60	--	--	--	--	--
2/13/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	708.06	707.79	706.14
6/12/13	708.48	708.48	707.82	707.46	698.69	699.32	702.91	700.25	704.13	707.80	709.37	709.88	709.89	699.50	707.42	705.55	704.87	709.03	708.20	706.40
7/16/13 9:50														706.13	704.30					
10/7/13					702.28					706.93				699.06	706.81	705.20				
12/3/13	707.99	708.00	707.41	707.22	700.76	699.94	702.91	700.50	704.41	706.89	710.44	--	709.79	706.26	703.73	705.01	704.69	708.67	708.49	706.19
12/4/13														--						
12/11/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/13/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/15/14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/16/14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	709.62	--	--
1/17/14							703.24							--						
2/6/14	708.29	708.36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	708.73	--	--
2/7/14	708.28	708.31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	708.72	--	--
4/29/14	707.89	708.12	707.49	707.08	699.64	699.86	703.64	702.15	704.79	707.79	710.43	705.86	709.79	699.44	707.58	705.33	704.85	708.79	707.73	706.79
5/19/14	707.93	707.86	707.50	707.09	701.38	699.51	702.98	701.06	704.30	707.62	710.79	708.39	709.60	698.45	707.78	705.22	704.62	708.25	707.49	706.51
6/22/14														--						

DTW - Depth to Water
WLE - Water Level Elevation
-- - No Data Available
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Table 3
Water Level Data Summary
RBTC LDB #1, Leitchfield, Kentucky
AMEC Project No. 6251-12-1002

Field ID	MW-28	MW-29	MW-30	MW-31	MW-32	TW-5	TW-6	TW-9	TW-10	TW-11	TW-12	TW-13	TW-14	TW-16	TW-17	TW-18	TW-19	SW-1	SW-2	SW-3	SW-4
Measuring Point Elevation (ft NAVD)	708.83	711.80	710.12	717.71	706.11	711.0	711.0	710.9	710.9	711.0	711.1	710.9	711.0	709.17	709.12	710.97	710.95	711.0	710.9	711.0	712.8
Measuring Point Elevation (ft NAVD) Feb 2014 - corrected					706.11									709.17	709.12	710.97	710.95				
Water Level Elevation (ft NAVD)																					
3/13/07																					
3/14/07																					
3/22/07																					
4/18/07																					
5/11/08																					
5/19/08																					
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6/16/08																					
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3/25/09																					
5/30/09																					
5/18/09																					
7/1/09																					
9/24/09																					
9/28/09 8:30																					
9/28/09 13:45																					
9/29/09																					
9/30/09																					
10/2/09																					
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10/28/09																					
2/6/12	704.26																				
3/5/12	704.25																				
3/8/12						703.09	708.10		704.07	705.89	707.30		705.96								
4/30/12																					
5/1/12																					
5/2/12	703.87					705.47	707.95	707.65	707.30	706.76	706.86	706.57	704.14								
6/12/12	703.89					709.06	708.28	708.23	707.75	707.14	707.19	705.81	705.54								
8/20/12	703.85					708.47	707.74	707.58	707.15	706.49	706.17	705.48	704.33								
11/9/12	704.36					708.93	708.39	707.81	707.47	706.89	707.13	706.44	706.23					707.23	707.71	707.94	707.95
12/10/12	705.25					707.25	707.96	707.83	707.15	727.25	707.05	706.03	706.14								
1/7/13	703.64					708.60	708.25	708.14	707.41	727.56	707.28	706.00	705.69								
1/15/13																					
2/11/13	704.66					709.08	708.78	708.66	708.22	708.03	707.62	706.32	706.12								
2/12/13																					
2/13/13								708.67			707.82	706.35	706.20								
6/17/13	703.93		705.65			709.40	708.94	708.68	708.43	708.31	707.90	706.58	706.56								
7/16/13 9:50		704.05	706.30																		
10/7/13																					
12/3/13	703.68	705.67	706.95	708.56		708.98	708.57	708.58	708.19		707.47	706.42	706.11							708.49	708.41
12/4/13										708.01								707.77	707.90	708.56	708.06
12/11/13																					
12/13/13					703.07									705.44	705.70						
1/15/14														705.63	705.60						
1/16/14														705.72	706.29						
1/17/14					703.17											707.78	707.70				
2/6/14							708.52		708.23			706.59									
2/7/14							708.50		708.08												
4/29/14	704.38	708.33	706.89	717.71		707.77	708.53	708.49	707.73	707.76	707.54	706.78	706.83	705.13	706.61	708.29	709.13			708.54	708.53
5/19/14	703.76	708.38	706.82	717.04		708.56	708.06	708.02	707.46	707.67	707.23	706.54	706.54	705.38	705.66	708.07	708.85	707.66	708.23	708.13	708.10
6/23/14																					

GTW - Depth to Water
WLE - Water Level Elevation
-- - No Data Available
NAVD - North American Vertical Datum of 1988

Table 4
Groundwater Field Parameter Data - 2012-2014
RBTC LDB#1, Leitchfield, Kentucky
AMEC Project No. 6251-12-1002

Well No.	Date	Time	Depth to Water (ft BTOP)	Water Level Drawdown (ft)	Purge Rate* (mL/min)	Specific Capacity (gpm/ft)	Temperature (°C)	Specific Conductance (SC) (uS/cm)	pH (S.U.)	Dissolved Oxygen (DO) (mg/L)	Oxidation-Reduction Potential (ORP) (mV)	Turbidity (NTU)	Sample Time	Notes
MW-1	2/7/2012	9:15	--	--	--	--	9.61	240	7.06	4.46	244.9	>1100	13:20	Well purged dry. Purge water appeared to be turbid with no odor.
MW-1	6/12/2012	11:03	--	--	--	--	21.64	307	5.88	--	105.8	>1100	15:30	Well purged dry. Purge water appeared to be turbid with no odor.
MW-1	12/13/2012	11:52	16.85	5.20	100	0.005	14.75	310	5.97	3.34	30.9	259	11:55	Well purged dry. Purge water appeared to be very turbid, brownish gray, with no odor.
MW-1	2/12/2013	11:20	16.94	10.18	110	0.003	12.36	502	6.11	2.27	167.3	639	11:25	Turbidity continues to increase as the water draws down.
MW-1	6/17/2013	16:47	13.72	5.06	100	0.005	14.55	309	5.40	1.77	91.8	44.8	16:50	Well purged dry. Water was turbid, gray no odor.
MW-1	5/19/2014	12:06	6.83	4.42	100	0.006	12.57	319	6.55	0.59	39.7	16.3	12:08	
MW-2	2/7/2012	10:41	3.04	0.33	210	0.158	14.72	555	7.15	0.12	321.0	1.9	10:50	Water appeared to be clear, no odor. Pump intake depth at 13.5 feet BGS.
MW-2	6/12/2012	13:45	2.91	0.11	130	0.312	18.32	742	6.71	0.32	14.5	2.18	13:50	Water appeared to be clear, no odor. Pump intake depth at 13 feet BGS.
MW-2	12/13/2012	11:04	3.26	0.04	210	1.387	15.41	729	7.11	0.23	62.1	2.86	11:05	Water appeared to be clear, no odor. Pump intake depth at 13 feet BGS.
MW-2	2/12/2013	11:05	2.85	0.16	200	0.330	14.21	778	7.06	0.24	277.8	2.04	11:10	
MW-2	6/18/2013	9:57	2.25	0.54	160	0.302	16.92	876	6.90	0.42	26.6	1.24	10:00	Water was clear, no odor. Pump intake at aprrox 15 feet.
MW-2	5/19/2014	16:16	4.33	0.27	250	0.245	14.60	879	5.26	0.35	69.7	3.20	16:18	
MW-2M	2/7/2012	12:15	8.05	0.85	200	0.062	16.10	729	7.80	0.21	307.5	7.7	12:30	Water appeared to be turbid, no odor. Observed white panicles in flow through cell. Pump intake depth at 35 feet BGS.
MW-2M	6/15/2012	9:05	7.76	0.63	120	0.050	14.05	945	7.03	0.18	16.0	1.25	9:15	Water appeared to be clear, no odor. Pump intake depth at 36 feet BGS.
MW-2M	12/13/2012	9:21	9.08	2.02	200	0.026	15.33	809	7.23	0.39	32.2	1.67	9:25	Water appeared to be clear, no odor. Pump intake depth at 34 feet BGS.
MW-2M	2/12/2013	12:10	6.82	0.36	200	0.147	15.77	877	7.17	0.32	278.3	2.13	12:15	
MW-2M	6/18/2013	10:43	7.02	0.32	200	0.166	19.62	559	9.38	6.09	18.2	4.44	10:46	Pump intake at approx. 37 feet. Water was clear, no odor.
MW-2M	5/19/2014	15:42	10.67	1.01	250	0.065	16.34	958	6.16	0.36	50.7	0.87	15:44	
MW-3	2/9/2012	8:50	--	--	--	--	4.96	461	7.21	6.82	299.2	330	8:55	Water level stabilized around 6 to 7 feet BMP during purging. Turbid, no odor.
MW-3	6/13/2012	12:20	--	--	--	--	24.49	870	7.16	2.43	-17.7	>1100	15:05	Water level stabilized around 5 feet BMP during purging. Turbid, no odor.
MW-3	12/13/2012	9:27	7.60	5.68	1104	0.051	11.90	1,520	6.29	--	--	--	9:33	3DMe in purge water. Purge water appeared to be turbid, white to light gray, 3DMe odor.
MW-3	2/12/2013	9:41	3.65	2.73	230	0.022	11.63	1,310	6.25	0.49	45.4	181	9:45	3DMe odor in purge water. Large white panicles suspended in purge water.
MW-3	6/18/2013	15:00	2.93	2.08	130	0.017	21.09	1246	8.15	--	--	--	15:01	
MW-3	2/13/2014	13:25	--	--	--	--	7.4	1210	6.38	--	--	--	No Sample	Water slightly cloudy, white. 3DMe odor.
MW-3	2/26/2014	13:56	--	--	--	--	12	1050	6.2	--	--	--	No Sample	3DMe present in purge water.
MW-3	5/19/2014	12:38	3.93	1.07	130	0.025	16.11	1027	6.83	0.30	-100.5	317	12:40	
MW-4	2/9/2012	10:05	--	--	--	--	9.17	450	7.32	6.41	278.5	>1100	14:45	Well purged dry. Purge water appeared to be turbid with no odor.
MW-4	6/13/2012	11:45	--	--	--	--	25.64	721	6.84	2.03	53.1	>1100	15:15	Well purged dry. Purge water appeared to be turbid with no odor.
MW-4	12/13/2012	11:25	10.06	7.57	1840	0.057	12.0	1,610	5.95	--	--	--	11:30	3DMe in purge water. Purge water appeared to be turbid, white to light gray, 3DMe odor.
MW-4	2/12/2013	11:43	5.57	1.16	200	0.039	11.9	1,370	6.7	--	--	--	No Sample	3DMe in purge water. Purge water appeared to be slightly turbid, light gray, 3DMe odor.
MW-4	2/12/2013	12:20	5.66	2.66	120	0.012	12.6	1,260	5.71	--	--	--	12:22	3DMe odor. Slightly cloudy.
MW-4	6/18/2013	13:45	6.41	3.68	130	0.009	23.69	893	6.25	--	--	--	13:48	
MW-4	2/13/2014	13:05	--	--	--	--	7	1393	6.46	--	--	--	No Sample	Water cloudy, white. 3DMe odor.
MW-4	2/26/2014	13:27	--	--	--	--	8	1090	6.03	--	--	--	No Sample	3DMe present in purge water.
MW-4	5/19/2014	16:25	5.78	1.46	100.00	0.078	16.89	942	6.81	0.29	54.0	20.4	16:30	
MW-5	2/9/2012	11:18	4.65	0.54	120	0.059	13.94	1,212	7.22	0.47	320.2	2.7	11:30	Water appeared to be clear, no odor. Pump intake depth at 24 feet BGS.
MW-5	6/13/2012	11:36	4.54	0.66	140	0.056	17.30	1,678	6.92	0.21	79.9	2.09	11:40	Water appeared to be clear, no odor. Pump intake depth at 16 feet BGS.
MW-5	12/13/2012	11:13	16.96	13.31	522	0.010	14.1	1,820	6.09	--	--	--	11:19	3DMe in purge water. Purge water appeared to be turbid, white to light gray, 3DMe odor.
MW-5	1/7/2013	14:50	8.92	5.32	140	0.007	14.4	1,670	7.1	--	--	--	No Sample	3DMe in purge water. Purge water appeared to be slightly turbid, light gray, 3DMe odor.
MW-5	2/12/2013	14:50	6.03	2.82	130	0.012	12.7	1,510	5.65	--	--	--	14:55	Black particulates in purge water
MW-5	6/18/2013	11:54	8.10	6.07	140	0.006	16.3	190	6.61	--	--	--	11:56	
MW-5	10/7/2013	16:28	7.92	4.13	130	0.006	18.74	1131	6.03	1.99	53.7	8.49	16:35	Water was clear, slight 3DMe odor.
MW-5	2/13/2014	13:09	--	--	--	--	8.2	2210	5.28	--	--	--	No Sample	Water very cloudy. 3DMe odor.
MW-5	2/26/2014	13:09	--	--	--	--	8	550	5.5	--	--	--	No Sample	3DMe present in purge water.
MW-5	5/20/2014	16:15	9.37	4.69	60	0.005	17.17	1638	6.14	0.20	40.2	19.0	16:17	
MW-5M	2/9/2012	12:06	9.63	3.60	140	0.011	14.54	504	9.34	1.80	316.8	5.5	12:15	Water appeared top be clear, no odor. Pump intake depth at 32 feet BGS.
MW-5M	6/13/2012	12:33	7.03	0.35	140	0.108	18.08	631	8.89	1.16	5.0	2.05	12:45	Water appeared to be clear, no odor. Pump intake depth at 32 feet BGS.
MW-5M	12/12/2012	15:19	13.09	8.41	120	0.005	15.99	504	8.43	2.24	-223.8	9.6	15:23	Water appeared to be clear, no odor. Pump intake depth at 33 feet BGS.
MW-5M	2/11/2013	15:40	15.23	9.92	160	0.004	14.71	646	8.79	3.77	138.7	4.42	15:45	
MW-5M	6/17/2013	15:05	12.81	6.96	110	0.004	19.28	417	8.81	2.56	-18.7	4.25	15:05	
MW-5M	5/20/2014	17:32	12.42	5.95	80	0.004	19.92	516	8.22	0.12	-143.7	12	17:35	
MW-6	2/7/2012	16:15	--	--	--	--	9.98	443	6.95	5.56	235.8	5.7	13:05	Well purged dry. Purge water appeared to be turbid with no odor.
MW-6	6/15/2012	12:30	--	--	--	--	21.87	787	7.21	2.66	46.5	>1100	15:38	Well purged dry. Purge water appeared to be turbid with no odor.
MW-6	12/12/2012	10:19	4.10	2.78	120	0.011	13.75	409	7.68	1.97	-161.7	8.9	10:27	Water appeared top be clear, no odor. Pump intake depth at 7.5 feet BGS.
MW-6	2/11/2013	16:44	4.34	2.46	170	0.018	10.13	665	8.91	2.14	108.9	3.77	16:45	
MW-6	6/18/2013	10:40	4.61	1.58	150	0.025	18.60	401	6.87	2.32	43.0	9.0	10:40	
MW-6	5/20/2014	15:17	4.27	1.12	100	0.024	17.08	433	7.33	0.71	48.5	1.25	15:19	
MW-7	2/9/2012	13:08	2.68	0.35	200	0.151	14.29	824	7.33	0.24	360.5	3.4	13:15	Water appeared to be clear, no odor. Pump intake depth at 9.5 feet BGS.

Table 4
Groundwater Field Parameter Data - 2012-2014
RBTC LDB#1, Ledbetter, Kentucky
AMEC Project No. 6251-12-1002

Well No.	Date	Time	Depth to Water (ft BMP)	Water Level Drawdown (ft)	Purge Rate* (mL/min)	Specific Capacity (gpm/ft)	Temperature (°C)	Specific Conductance (SC) (µS/cm)	pH (S.U.)	Dissolved Oxygen (DO) (mg/L)	Oxidation-Reduction Potential (ORP) (mV)	Turbidity (NTU)	Sample Time	Notes
MW 7	6/14/2012	8:25	3.03	0.44	150	0.108	20.13	2,107	6.97	0.14	34.1	4.30	8:30	Water appeared to be clear, no odor. Pump intake depth at 9 feet BGS.
MW 7	12/12/2012	12:05	3.65	1.63	120	0.078	13.0	1,450	6.49	--	--	--	12:10	3DMe in purge water. Purge water appeared to be turbid, white to light gray, slight 3DMe odor.
MW 7	1/7/2013	15:50	3.28	0.98	110	0.030	10.1	1,380	7.2	--	--	--	No Sample	3DMe in purge water. Purge water appeared to be slightly turbid to clear, light gray, slight 3DMe odor.
MW 7	2/12/2013	11:17	2.89	1.13	110	0.026	12.2	1,472	6.22	--	--	--	11:20	Cloudy, slightly turbid, 3DMe odor.
MW 7	6/18/2013	8:58	3.75	1.57	140	0.024	22.1	1040	6.49	--	--	--	9:03	
MW 7	2/13/2014	12:42	--	--	--	--	10.2	1420	6.37	--	--	--	No Sample	Water slightly cloudy, 3DMe odor.
MW 7	2/26/2014	12:52	--	--	--	--	10	1310	6.8	--	--	--	No Sample	3DMe present in purge water.
MW 7	5/23/2014	16:53	3.91	1.41	150	0.028	18.18	1609	6.56	0.23	1.10	73.1	16:55	
MW 8	2/9/2012	14:48	6.39	1.41	120	0.022	15.11	798	6.89	0.49	348.7	2.6	14:55	Water appeared to be clear, no odor. Pump intake depth at 18 feet BGS.
MW 8	6/12/2012	16:53	7.77	2.85	150	0.014	20.47	1,031	6.48	0.18	20.3	1.54	16:55	Water appeared to be clear, no odor. Pump intake depth at 11 feet BGS.
MW 8	12/12/2012	16:30	18.83	12.51	300	0.006	13.80	3,120	5.51	--	--	--	16:50	Well purged dry. 3DMe in purge water. Purge water appeared to be turbid, white to light gray, slight 3DMe odor.
MW 8	2/12/2013	8:10	7.70	2.26	100	0.012	11.6	1,860	4.99	--	--	--	8:15	Cloudy, 3DMe odor.
MW 8	6/19/2013	10:55	6.87	3.16	135	0.011	21.06	1867	5.15	--	--	--	10:59	Some orange particulates.
MW 8	1/7/2013	14:59	7.53	3.07	100	0.009	21.76	1790	5.19	0.62	44.5	8.39	15:05	Water was clear, slight 3DMe odor.
MW 8	2/13/2014	10:50	--	--	--	--	8.6	1320	6.02	--	--	--	No Sample	Water slightly cloudy, orange and white particulates, oily, 3DMe odor.
MW 8	2/26/2014	12:24	--	--	--	--	12.00	1290	5.5	--	--	--	No Sample	3DMe present in purge water.
MW 8	5/19/2014	12:50	14.09	4.88	120	0.006	22.63	1240	6.11	5.63	6.2	--	13:00	
MW 8M	2/7/2012	16:33	14.64	4.56	120	0.007	17.18	564	7.87	1.81	252.9	2.2	16:20	Water appeared to be clear, no odor. Pump intake depth at 34 feet BGS.
MW 8M	6/13/2012	13:00	21.59	12.08	160	0.003	21.74	1,312	7.74	3.36	28.8	5.04	13:05	Water appeared to be clear, no odor. Pump intake depth at 34 feet BGS.
MW 8M	12/12/2012	12:30	19.47	1.13	110	0.026	17.47	1,036	8.04	0.31	-112.2	1.04	12:35	Water appeared to be clear, no odor. Pump intake depth at 33 feet BGS.
MW 8M	2/11/2013	16:40	14.81	3.85	100	0.007	15.52	684	7.91	3.97	-198.8	7.4	16:45	
MW 8M	6/18/2013	16:05	17.01	5.76	110	0.005	21.16	760	7.73	0.93	60.2	3.75	16:00	
MW 8M	5/19/2014	11:25	15.21	5.50	130	0.008	19.19	656	7.61	3.54	94.4	2.85	11:30	
MW 9	2/8/2012	15:05	7.20	1.04	120	0.030	16.98	931	6.82	0.28	305.5	4.1	15:15	Water appeared to be clear, no odor. Pump intake depth at 12 feet BGS.
MW 9	6/14/2012	9:55	8.21	2.09	180	0.023	18.33	2,013	6.45	0.20	28.9	6.20	10:00	Water appeared to be clear, no odor. Pump intake depth at 12 feet BGS.
MW 9	12/11/2012	15:03	6.45	1.50	160	0.028	19.99	1,095	7.17	1.23	218.7	10	15:10	Water appeared to be clear to slightly turbid, no odor to slight decomposed odor. Pump intake depth at 12 feet BGS.
MW 9	2/12/2013	12:55	7.40	1.72	160	0.025	17.28	1,648	6.76	0.16	51.0	3.76	13:00	
MW 9	6/19/2013	15:55	6.41	1.49	150	0.027	17.71	1219	6.63	0.17	72.4	--	15:55	Visibly clear. Meter not working.
MW 9	5/20/2014	18:56	6.56	1.40	150	0.029	16.42	1125	6.27	0.40	17.0	2.36	18:58	
MW 10	2/8/2012	9:45	--	--	--	--	10.92	537	7.53	4.65	243.1	560	14:05	Well purged dry. Purge water appeared to be turbid with no odor.
MW 10	6/14/2012	12:19	--	--	--	--	20.52	668	6.52	3.79	94.6	48.7	16:30	Well purged dry. Purge water appeared to be clear to slightly turbid, no odor.
MW 10	12/11/2012	14:29	5.49	1.90	110	0.015	15.9	2,430	6.77	--	--	--	14:30	3DMe in purge water. Purge water appeared to be turbid, white to light gray, 3DMe odor.
MW 10	1/8/2013	13:27	6.51	1.82	120	0.017	14.4	2,060	6.5	--	--	--	No Sample	No sample to be obtained. Approx. 1 gallon purged.
MW 10	2/13/2013	12:42	4.28	0.30	120	0.010	11.7	1,790	6.24	--	--	--	12:46	Slightly turbidity and turbid. 3DMe odor.
MW 10	6/19/2013	11:57	6.73	1.71	130	0.020	17.59	1886	6.85	--	--	--	11:54	
MW 10	5/20/2014	18:01	4.61	3.32	100	0.008	15.68	1506	6.27	1.79	30.0	19.2	18:03	
MW 11A	2/8/2012	9:35	3.51	0.29	180	0.164	16.83	3,151	7.13	0.36	336.8	3.0	9:45	Water appeared to be clear, no odor. Pump intake depth at 12 feet BGS.
MW 11A	6/14/2012	15:34	3.67	0.23	120	0.138	17.99	4,526	6.96	0.16	77.9	7.49	15:40	Water appeared to be clear, no odor. Pump intake depth at 12 feet BGS.
MW 11A	12/10/2012	16:18	3.98	0.37	210	0.150	19.51	8,963	7.15	0.98	-17.1	10	16:23	Water appeared to be clear, no odor. Pump intake depth at 12 feet BGS.
MW 11A	1/8/2013	10:05	3.49	0.24	180	0.198	17.82	6,639	6.94	0.43	-185.0	0.86	10:08	
MW 11A	2/12/2013	13:45	3.92	1.14	200	0.046	15.92	6,755	6.89	0.40	276.4	2.21	13:55	
MW 11A	6/19/2013	12:57	2.88	0.35	160	0.121	17.17	9958	6.95	0.39	191.5	0.85	13:00	Pump intake at approx. 12 feet. Water was clear, no odor.
MW 11A	5/21/2014	11:50	3.42	0.13	140	0.285	16.17	12186	7.01	0.42	78.5	11	11:51	
MW 11B	2/8/2012	8:30	--	--	--	--	12.56	20,850	6.45	4.62	261.4	>1100	13:45	Well purged dry. Purge water appeared to be turbid with no odor.
MW 11B	6/14/2012	11:38	--	--	--	--	19.80	15,627	6.53	2.26	136.0	521	16:40	Well purged dry. Purge water turbid, gray brown, no odor.
MW 11B	12/11/2012	9:19	6.57	3.14	120	0.010	14.47	11,072	7.5	1.03	-129.3	600	9:44	Well purged dry. Purge water turbid, gray to black, with some fine BOS 100 carbon particles, no odor.
MW 11B	1/8/2013	11:48	8.42	3.33	110	0.009	16.51	10,266	7.03	0.17	-239.1	33.7	12:15	Well purged dry. Purge water was slightly turbid, gray, no odor.
MW 11B	2/12/2013	15:00	4.70	1.96	150	0.020	14.76	11,880	6.91	0.73	-248.7	14.0	15:10	
MW 11B	6/19/2013	14:02	8.41	4.06	100	0.007	18.30	9362	6.96	1.56	176.6	151	14:15	Well wet/dry. Pump intake at approx. 8.5 feet. Water was clear, no odor.
MW 11B	5/21/2014	10:47	5.21	2.16	100	0.012	16.45	8024	6.93	0.92	97.4	9.3	10:50	
MW 12A	2/8/2012	12:15	4.24	0.59	160	0.072	17.05	3,146	7.16	0.45	289.3	4.1	12:20	Water appeared to be clear with odor. Pump intake depth at 12.5 feet BGS.
MW 12A	6/14/2012	9:25	4.62	0.97	100	0.027	18.07	4,452	6.99	0.23	89.7	2.12	9:30	Water appeared to be clear, no odor. Pump intake depth at 13 feet BGS.
MW 12A	12/13/2012	16:40	5.03	1.09	140	0.034	19.53	1514	7.75	0.42	98.2	69.3	16:45	Purge water turbid, gray brown, with some fine BOS 100 carbon particles, no odor.
MW 12A	1/8/2013	9:22	4.46	0.67	100	0.039	18.11	4684	7.53	0.42	160.4	19.8	9:25	
MW 12A	2/12/2013	15:18	4.74	1.36	240	0.047	17.23	4142	7.47	0.29	67.9	9.2	15:20	Increasing turbidity with time drawn. BOS 100 daylighting.
MW 12A	6/19/2013	14:57	4.14	1.12	130	0.031	17.49	4255	7.19	0.30	44.7	202	14:57	
MW 12A	5/21/2014	10:15	4.76	0.48	120	0.066	16.76	4811	7.18	0.26	142.0	119	11:20	
MW 12B	2/8/2012	9:15	--	--	--	--	11.68	2,290	7.03	4.18	242.2	95	13:30	Well purged dry. Purge water appeared to be turbid with odor.
MW 12B	6/14/2012	11:11	--	--	--	--	19.83	1,261	6.20	1.71	107.1	103	16:50	Well purged dry. Purge water appeared to be turbid with slight odor.
MW 12B	12/11/2012	9:05	5.65	2.74	130	0.013	16.79	2,862	6.40	2.79	-152.5	22.1	9:12	Purge water appeared to be clear, slight odor.

Table 4
Groundwater Field Parameter Data - 2012-2014
RBTC LDB#1, Leitchfield, Kentucky
AMEC Project No. 6251-12-1002

Well No.	Date	Time	Depth to Water (ft BTOP)	Water Level Drawdown (ft)	Purge Rate* (mL/min)	Specific Capacity (gpm/ft)	Temperature (°C)	Specific Conductance (SC) (uS/cm)	pH (S.U.)	Dissolved Oxygen (DO) (mg/L)	Oxidation-Reduction Potential (ORP) (mV)	Turbidity (NTU)	Sample Time	Notes
MW-12B	1/8/2013	10:15	5.09	1.24	105	0.022	16.91	3.859	6.73	2.05	168.5	3.96	10:17	
MW-12B	2/12/2013	15:03	5.29	1.77	120	0.018	15.27	4.546	6.73	1.31	112.1	2.65	15:05	
MW-12B	6/19/2013	15:37	4.40	1.10	110	0.026	18.63	3.407	6.37	1.32	87.1	12.6	15:55	Pump stopped at 15:40 to allow recharge
MW-12B	5/21/2014	12:40	6.58	2.66	110	0.011	16.49	4.252	6.55	0.36	156.6	102	12:45	
MW-13	2/8/2012	16:14	3.44	0.92	120	0.034	10.90	239	5.75	0.29	308.4	2.2	16:40	Water appeared to be clear, no odor. Pump intake depth at 10 feet BGS.
MW-13	6/13/2012	10:25	4.24	1.21	200	0.042	23.64	568	5.23	0.23	35.2	3.49	10:30	Water appeared to be clear, no odor. Pump intake depth at 10 feet BGS.
MW-13	12/12/2012	14:27	5.40	2.92	150	0.014	15.2	710	7.02	--	--	--	14:30	3DMe in purge water. Purge water appeared to be turbid, white to light gray, slight 3DMe odor.
MW-13	1/8/2013	17:03	4.20	0.86	160	0.049	12.3	1.030	5.8	--	--	--	No Sample	No sample to be obtained. Approx. 1.75 gallons purged.
MW-13	2/11/2013	13:40	5.20	3.63	120	0.009	11.7	1.030	5.04	--	--	--	13:50	Duplicate sample obtained. Low flow purging w/our flow through cell or YSI 556. Hanna used to obtain parameters.
MW-13	6/18/2013	16:14	7.51	5.09	140	0.007	21.41	1479	5.43	--	--	--	16:15	Turbid, sewage odor.
MW-13	2/13/2014	1:15	--	--	--	--	5.8	930	6.43	--	--	--	No Sample	Water slightly cloudy, white, 3DMe odor.
MW-13	2/26/2014	12:09	--	--	--	--	9	950	6.1	--	--	--	No Sample	3DMe present in purge water.
MW-13	5/19/2014	16:30	8.97	5.12	130	0.007	18.99	992	6.02	0.46	11.4	22.2	16:35	
MW-13M	2/8/2012	15:46	6.88	0.99	120	0.032	15.08	530	6.03	0.71	317.8	19	15:50	Water appeared to be clear, no odor. Pump intake depth at 30 feet BGS.
MW-13M	6/13/2012	9:20	8.63	1.92	240	0.033	19.68	1.304	7.73	0.19	41.5	5.65	9:25	Water appeared to be clear, no odor. Pump intake depth at 30 feet BGS.
MW-13M	12/12/2012	11:30	7.37	0.80	120	0.040	17.48	1.033	7.77	0.29	-184.6	8.12	11:15	Water appeared to be clear, with some fine suspended particles (organic), no odor. Pump intake depth at 30 feet BGS.
MW-13M	1/8/2013	13:40	7.70	1.12	110	0.026	17.71	808	7.62	0.47	135.2	4.31	No Sample	No sample collected, used flow through cell, YSI 556, and HACH 2100P for parameters.
MW-13M	2/11/2013	15:10	6.73	0.82	113	0.035	15.59	688	7.89	1.34	321.5	4.8	15:15	No odor, clear. Pump intake level 28 feet BMP.
MW-13M	6/19/2013	9:25	7.42	0.81	112	0.030	19.96	666	7.64	0.29	19.8	--	9:25	Turbidimeter not working. Sample was visually clear.
MW-13M	12/7/2013	16:10	7.47	4.56	--	--	23.06	1250	5.63	0.65	55.5	48.3	16:15	
MW-13M	5/19/2014	15:25	7.54	1.40	120	0.021	19.27	556	7.59	0.24	17.1	2.53	15:30	
MW-14	2/9/2012	13:59	4.12	1.12	160	0.038	12.14	280	6.65	0.22	367.3	40	14:10	Water appeared to be turbid, no odor. Pump intake depth at 12 feet BGS.
MW-14	6/13/2012	14:40	4.86	1.62	240	0.040	23.31	752	6.44	0.34	32.8	9.71	14:45	Water appeared to be turbid, no odor. Pump intake depth at 12 feet BGS.
MW-14	12/12/2012	14:50	3.92	1.61	80	0.013	15.70	620	6.40	0.29	59.1	25.6	14:55	Water appeared to be slightly turbid, with some fine suspended particles (silty, organic), no odor.
MW-14	2/11/2013	16:40	3.92	0.98	175	0.048	11.66	335	6.33	0.53	297.2	38.5	16:45	
MW-14	6/18/2013	15:10	4.39	1.09	150	0.037	21.00	368	6.39	0.20	52.9	18.9	15:10	
MW-14	12/7/2014	12:20	3.96	1.04	160	0.041	11.05	357	6.49	0.27	11.7	29.1	12:25	
MW-14	2/26/2014	12:39	--	--	--	--	7.0	360	6.4	--	--	--	No Sample	3DMe present in purge water.
MW-14	5/20/2014	9:15	5.40	2.23	130	0.015	17.68	513	6.51	0.23	83.0	3.24	9:25	
MW-15	2/7/2012	17:05	--	--	--	--	9.16	470	7.05	3.29	280.8	>1100	13:00	Well purged dry. Purge water appeared to be turbid with no odor.
MW-15	6/14/2012	16:39	--	--	--	--	24.18	979	7.07	2.53	133.1	1000	16:40	Well purged dry. Purge water appeared to be turbid, brown, no odor.
MW-15	12/12/2012	9:09	2.79	2.69	120	0.012	12.64	211	7.98	4.65	-156.4	45	9:17	Purge water appeared to be slightly turbid, brown, no odor.
MW-15	2/12/2013	8:25	3.74	2.70	200	0.020	8.97	606	7.32	1.11	92.5	3.31	8:30	
MW-15	6/18/2013	11:50	4.46	2.04	150	0.019	20.51	460	7.07	0.39	29.8	19.2	11:50	
MW-15	5/20/2014	16:04	3.89	1.46	100	0.018	17.79	265	6.50	0.96	54.8	11.7	16:06	
MW-16	2/9/2012	11:35	--	--	--	--	7.48	318	8.26	4.90	271.0	>1100	14:55	Well purged dry. Purge water appeared to be turbid, no odor.
MW-16	6/13/2012	11:15	--	--	--	--	25.31	515	6.82	1.66	21.2	>1100	15:25	Well purged dry. Purge water appeared to be turbid, brown, no odor.
MW-16	12/12/2012	11:48	2.91	1.93	120	0.016	13.90	393	7.64	0.64	-169.3	7.0	11:52	Purge water appeared to be clear, no odor. Pump intake depth at 9 feet BGS.
MW-16	2/11/2013	14:20	4.06	2.41	130	0.014	11.13	500	6.82	1.30	79.2	3.05	14:25	
MW-16	6/18/2013	9:35	4.21	1.72	110	0.017	18.90	505	6.94	0.34	5.1	4.02	9:35	
MW-16	5/20/2014	10:49	3.14	0.73	100	0.036	16.15	504	7.03	0.35	21.2	1.78	10:51	
MW-17	2/9/2012	8:21	4.19	1.68	90	0.014	11.22	504	6.54	0.46	260.1	3.1	8:30	Water appeared to be clear, no odor. Pump intake depth at 12 feet BGS.
MW-17	6/13/2012	14:44	4.01	1.50	80	0.014	23.24	743	6.22	0.22	39.4	2.29	8:30	Water appeared to be clear, no odor. Pump intake depth at 10 feet BGS.
MW-17	12/13/2012	9:13	9.03	7.14	250	0.009	12.7	1.710	6.05	--	--	--	9:15	3DMe in purge water. Purge water appeared to be turbid, white to light gray, 3DMe odor.
MW-17	1/7/2013	14:37	3.68	1.42	150	0.030	12.1	1.580	7.8	--	--	--	No Sample	No sample to be obtained. Approx. 3 gallons purged.
MW-17	2/12/2013	13:47	3.74	1.73	140	0.021	11.5	1660	5.59	--	--	--	13:50	Cloudy, slightly turbid w/ 3DMe odor
MW-17	6/18/2013	10:35	3.85	1.66	135	0.019	23.40	1900	6.64	--	--	--	10:38	
MW-17	12/7/2013	17:43	3.82	0.79	140	0.047	23.34	1867	5.56	0.39	33.6	35.9	17:50	Water was clear w/ white particulates, 3DMe odor.
MW-17	2/13/2014	13:15	--	--	--	--	8.1	2170	5.44	--	--	--	No Sample	Water very cloudy, white, 3DMe odor.
MW-17	2/26/2014	13:43	--	--	--	--	9	1820	5.5	--	--	--	No Sample	3DMe present in purge water.
MW-17	5/19/2014	15:10	4.53	2.23	100	0.012	16.59	1211	6.08	0.83	7.60	21.7	15:15	
MW-18	2/7/2012	8:20	--	--	--	--	7.49	207	8.16	3.38	242.7	>1100	13:25	Well purged dry. Purge water appeared to be turbid with no odor.
MW-18	6/13/2012	9:45	--	--	--	--	20.88	445	6.48	2.81	165.0	>1100	14:35	Well purged dry. Purge water appeared to be turbid with no odor.
MW-18	12/12/2012	8:57	2.38	1.86	140	0.020	9.3	830	5.94	--	--	--	9:00	3DMe in purge water. Purge water appeared to be turbid, white to light grey, slight 3DMe odor.
MW-18	2/12/2013	10:26	3.61	2.92	120	0.011	10.9	820	5.28	--	--	--	10:28	3DMe odor, cloudy.
MW-18	6/19/2013	9:50	4.11	4.11	120	0.006	21.00	1740	5.61	--	--	--	9:52	
MW-18	5/19/2014	12:55	4.46	4.11	100	0.006	14.28	628	6.01	0.49	47.5	28.7	12:57	
MW-19	2/7/2012	8:40	--	--	--	--	7.35	548	7.12	2.32	264.5	330	13:10	Well purged dry. Purge water appeared to be turbid with no odor.

Table 4
Groundwater Field Parameter Data - 2012-2014
RBTC LDB#1, Leitchfield, Kentucky
AMEC Project No. 6251-12-1002

Well No.	Date	Time	Depth to Water (ft BMP)	Water Level Drawdown (ft)	Purge Rate* (mL/min)	Specific Capacity (gpm/ft)	Temperature (°C)	Specific Conductance (SC) (uS/cm)	pH	Dissolved Oxygen (DO) (mg/L)	Oxidation-Reduction Potential (ORP) (mV)	Turbidity (NTU)	Sample Time	Notes
MW-19	6/13/2012	9:30	--	--	--	--	23.05	1.580	6.79	1.35	140.1	>1100	16:25	Well purged dry. Purge water appeared to be turbid, no odor.
MW-19	12/12/2012	16:44	3.81	3.16	120	0.010	12.17	1.096	6.98	0.66	-168.4	6.3	16:50	Purge water appeared to be clear, no odor. Pump intake depth at 6 feet BGS.
MW-19	2/12/2013	9:45	4.37	1.93	175	0.024	11.24	1.395	6.92	1.32	282.8	1.16	9:50	
MW-19	6/17/2013	15:21	4.88	4.60	80	0.005	21.50	1511	6.84	0.80	28.5	1.03	15:25	Pump intake at approx. 7 feet. Water was clear, no odor.
MW-19	5/19/2014	12:03	5.68	4.05	100	0.007	15.60	1554	5.55	0.72	61.8	1.39	12:05	
MW-20	2/7/2012	15:30	--	--	--	--	11.94	376	6.73	5.33	201.3	5.5	13:45	Well purged dry. Purge water appeared to be clear, no odor.
MW-20	6/14/2012	10:23	--	--	--	--	21.01	632	7.47	--	134.6	65	14:21	Well purged dry. Purge water appeared to be slightly turbid, no odor.
MW-20	12/11/2012	16:34	7.04	4.30	160	0.010	13.19	497	7.66	3.10	222.5	8.42	16:35	Purge water appeared to be clear, no odor.
MW-20	2/11/2013	14:05	4.87	3.40	150	0.012	11.52	527	7.49	2.90	257.6	2.87	14:15	
MW-20	6/18/2013	11:45	4.11	3.81	100	0.007	18.74	404	7.62	3.25	43.6	3.51	11:48	Pump intake at approx. 4 feet. Water was clear, no odor.
MW-20	5/19/2014	17:56	4.85	3.09	100	0.009	14.41	513	6.25	1.11	60.1	6.60	17:58	
MW-21	2/7/2012	15:30	--	--	--	--	13.26	623	6.60	5.06	212.3	3.9	13:55	Well purged dry. Purge water appeared to be clear with no odor.
MW-21	6/13/2012	14:05	--	--	--	--	19.13	863	7.07	2.54	102.1	291	16:15	Well purged dry. Purge water appeared to be turbid with no odor.
MW-21	12/12/2012	16:11	11.66	3.85	100	0.014	13.6	2.700	6.04	--	--	--	16:15	Well purged dry. 3DMe in purge water. Purge water appeared to be turbid, white to light gray. 3DMe odor.
MW-21	2/12/2013	8:15	9.11	3.62	150	0.011	10.4	1.890	5.72	--	--	--	8:25	
MW-21	6/17/2013	16:29	12.47	3.20	130	0.011	21.2	1200	6.5	--	--	--	16:32	
MW-21	10/7/2013	12:49	11.90	2.10	100	0.013	21.61	1850	6.44	0.92	77.6	518	13:00	
MW-21	2/13/2014	12:15	--	--	--	--	8.2	800	6.47	--	--	--	No Sample	Water cloudy, white, strong 3DMe odor.
MW-21	2/26/2014	11:54	--	--	--	--	7	930	6.5	--	--	--	No Sample	3DMe present in purge water.
MW-21	5/20/2014	15:05	12.41	3.55	150	0.011	18.21	1237	6.45	1.50	50.2	>1000		Well went dry @ 15:10.
MW-22	2/7/2012	14:00	6.90	4.19	160	0.010	11.88	1.095	7.42	0.56	283.4	3.3	14:05	Water appeared to be clear, no odor. Pump intake depth at 9.5 feet BGS.
MW-22	6/12/2012	13:25	8.71	5.46	200	0.010	20.89	1.559	6.98	1.49	33.5	6.60	13:30	Water appeared to be clear, no odor. Pump intake depth at 9.5 feet BGS.
MW-22	12/12/2012	10:45	8.63	4.34	110	0.007	11.5	2.330	7.06	--	--	--	10:50	3DMe in purge water. Purge water appeared to be turbid, white to light gray. 3DMe odor.
MW-22	2/7/2013	16:55	9.21	3.06	110	0.009	9.5	2.270	6.2	--	--	--	No Sample	
MW-22	2/12/2013	9:16	7.47	4.93	110	0.006	9.4	1.360	5.54	--	--	--	9:18	Cloudy, slightly turbid. 3DMe odor.
MW-22	6/17/2013	14:36	10.31	3.60	120	0.009	23.10	1440	6.50	--	--	--	14:38	
MW-22	10/7/2013	12:30	9.04	5.71	--	--	21.17	1743	5.78	0.45	67.9	34.8	12:35	
MW-22	2/13/2014	12:05	--	--	--	--	9.4	1460	6.22	--	--	--	No Sample	Water cloudy, white orange particulate, 3DMe odor.
MW-22	2/26/2014	11:38	--	--	--	--	6.00	1750	6.10	--	--	--	No Sample	3DMe present in purge water.
MW-22	5/20/2014	17:00	10.13	7.72	150	0.005	18.07	510	5.97	0.41	16.7	53.5		
MW-23	2/7/2012	15:18	6.55	3.93	200	0.013	14.56	746	7.26	0.31	319.4	1.9	15:25	Water appeared to be clear, no odor. Pump intake depth at 10 feet BGS.
MW-23	6/12/2012	15:15	8.15	5.53	180	0.009	22.72	956	6.99	0.79	25.6	4.63	15:20	Water appeared to be clear, no odor. Pump intake depth at 10 feet BGS.
MW-23	12/12/2012	9:55	6.85	4.53	110	0.007	18.19	1.404	7.03	0.29	237.3	3.57	10:00	Water appeared to be slightly turbid with suspended particles (organics), no odor.
MW-23	2/11/2013	15:20	4.27	2.09	150	0.019	12.54	926	6.98	0.60	316.3	3.05	15:25	
MW-23	6/19/2013	10:55	6.43	4.97	110	0.006	22.01	991	6.94	0.13	137.9	--	10:55	Meter was not working. Water was visibly clear.
MW-23	10/7/2013	14:05	5.30	3.18	--	--	24.86	955	6.45	0.06	125.2	4.01	14:10	
MW-23	5/20/2014	11:25	9.33	6.37	140	0.006	19.13	909	6.95	0.22	37.5	2.17	11:30	
MW-24	2/7/2012	15:55	--	--	--	--	13.44	808	6.77	5.16	222.9	3.6	14:05	Well purged dry. Purge water appeared to be clear with no odor.
MW-24	6/12/2012	17:05	8.32	7.21	240	0.009	23.99	975	6.78	2.94	65.5	4.52	17:10	Water appeared to be clear, no odor. Pump intake depth at 9 feet BGS.
MW-24	12/11/2012	16:10	5.41	4.37	125	0.008	17.42	1.261	6.89	1.33	160.3	1.12	16:15	Water appeared to be clear, no odor. Pump intake depth at 9 feet BGS.
MW-24	2/11/2013	16:20	3.42	2.76	150	0.014	12.27	1.070	7.00	2.38	292.2	0.54	16:25	
MW-24	6/19/2013	8:57	3.17	2.49	100	0.011	22.55	1017	6.90	2.58	226.6	1.41	9:00	Pump intake at approx. 10.5 feet. Water was clear, no odor.
MW-24	5/19/2014	18:35	5.04	3.99	100	0.007	14.69	1048	5.76	0.54	57.4	0.74	18:38	
MW-25	2/8/2012	10:15	--	--	--	--	11.33	25.725	6.78	2.91	258.9	>1100	13:55	Well purged dry. Purge water appeared to be turbid with no odor.
MW-25	6/14/2012	16:00	4.40	2.03	200	0.026	18.87	66.760	6.42	0.37	43.4	13.2	16:05	Water appeared to be clear, no odor. Pump intake depth at 8 feet BGS.
MW-25	12/11/2012	9:30	4.04	1.14	160	0.037	16.52	18.075	7.00	0.61	189.6	74.8	9:35	Purge water appeared to be very turbid, dark gray to black, with some fine BDS 100 carbon particles, no odor.
MW-25	2/13/2013	9:41	3.37	1.27	210	0.044	15.12	18.400	7.06	0.69	129.6	14.8	9:45	
MW-25	6/19/2013	11:17	3.23	1.28	80	0.017	17.56	22061	6.83	0.86	191.0	1.17	11:20	Pump intake at approx. 9.5 feet. Water was clear, slight chlorine odor towards end of purging.
MW-25	5/21/2014	13:44	3.64	0.89	150	0.045	15.93	14860	7.24	0.29	110.0	164	13:46	
MW-26	2/8/2012	11:23	5.39	1.67	180	0.028	14.87	6.272	6.71	0.42	292.3	2.1	11:25	Water appeared to be clear, odor. Pump intake depth at 10 feet BGS.
MW-26	6/14/2012	13:45	4.34	0.86	90	0.025	18.71	9.570	6.62	0.25	98.9	1.40	13:55	Water appeared to be clear, odor. Pump intake depth at 10 feet BGS.
MW-26	12/10/2012	17:01	6.93	3.47	150	0.011	16.96	10.050	7.27	0.26	142.7	43.2	17:05	Purge water appeared to be turbid, dark gray to black, with some fine BDS 100 carbon particles, no odor.
MW-26	2/13/2013	9:55	3.71	0.87	200	0.061	15.43	9.435	6.91	0.40	278.0	102	10:00	
MW-26	6/20/2013	9:18	4.12	1.51	125	0.022	17.69	10683	6.79	0.51	44.7	39.7	9:20	
MW-26	5/21/2014	14:45	3.87	0.51	100	0.052	16.38	11687	6.86	0.38	77.6	50	14:48	
MW-27	2/8/2012	14:00	6.21	0.56	90	0.042	15.77	2.272	6.51	0.30	266.7	1.8	14:10	Water appeared to be clear, no odor. Pump intake depth at 10 feet BGS.
MW-27	6/14/2012	12:05	5.87	1.50	200	0.035	17.79	5.268	6.09	0.35	48.2	4.56	12:10	Water appeared to be clear, no odor. Pump intake depth at 10 feet BGS.
MW-27	12/11/2012	12:25	6.74	1.98	130	0.017	18.30	1.575	6.44	1.40	-161.7	18.2	12:30	Purge water appeared to be turbid, dark gray to black, with some fine BDS 100 carbon particles, no odor.
MW-27	1/8/2013	11:30	8.08	0.91	105	0.030	16.68	2.075	6.55	0.70	-116.3	5.21	11:35	

Table 4
Groundwater Field Parameter Data - 2012-2014
RBTC LDB#1, Leitchfield, Kentucky
AMEC Project No. 6251-12-*002

Well No.	Date	Time	Depth to Water (ft BMP)	Water Level Drawdown (ft)	Purge Rate* (mL/min)	Specific Capacity (gpm/ft)	Temperature (°C)	Specific Conductance (SC) (uS/cm)	pH (S.U.)	Dissolved Oxygen (DO) (mg/L)	Oxidation-Reduction Potential (ORP) (mV)	Turbidity (NTU)	Sample Time	Notes
MW-27	2/13/2013	9:59	5.69	0.98	120	0.032	15.63	1,591	6.71	2.09	270.8	14	10:00	Light gray to clear, slightly turbid, fine BOS 100 particulate. No odor.
MW-27	6/19/2013	13:55	7.21	2.71	110	0.011	17.28	1417	6.08	0.30	14.2	--	13:55	Meter broken. Water was visibly clear.
MW-27	5/21/2014	17:05	6.56	1.85	95	0.014	16.14	1395	6.05	0.32	133.9	67.7	17:10	
MW-28	2/9/2012	9:57	5.25	0.55	140	0.067	12.64	396	6.99	0.25	319.3	2.1	10:05	Water appeared to be clear, no odor. Pump intake depth at 10 feet BGS.
MW-28	6/14/2012	16:15	5.77	0.83	200	0.064	22.74	1,123	6.78	0.43	32.6	4.66	16:20	Water appeared to be clear, no odor. Pump intake depth at 10 feet BGS.
MW-28	12/13/2012	10:30	6.01	4.43	1295	0.077	11.80	800	6.75	--	--	--	10:35	3DMe suspended particles in purge water. Purge water appeared to be clear to slightly turbid, slight 3DMe odor.
MW-28	2/11/2013	13:24	5.96	1.89	180	0.025	13.47	583	6.77	0.39	89.3	5.29	13:30	Slight odor to purge water.
MW-28	6/17/2013	16:25	6.08	2.18	110	0.013	19.32	606	6.75	0.27	-125.2	10.7	16:25	
MW-28	2/13/2014	12:55	--	--	--	--	9.0	510	6.56	--	--	--	No Sample	Water clear, orange and black particulate, 3DMe odor.
MW-28	5/23/2014	10:13	5.49	0.42	100	0.063	16.83	700	6.93	0.31	14.1	2.69	10:15	
MW-29	5/23/2014	9:44	7.06	3.52	100	0.008	14.01	1581	6.18	3.96	169.6	9.18	9:47	
MW-30	6/18/2013	15:38	6.11	2.06	100	0.013	16.18	1272	7.14	7.23	196.9	3.03	15:40	Pump intake at approx. 9 feet. Water was clear, no odor.
MW-30	5/23/2014	11:54	6.13	2.83	100	0.009	15.06	1367	7.04	1.58	91.1	9.20	11:57	
MW-31	5/23/2014	14:43	7.63	6.97	100	0.004	16.89	145	6.67	2.94	93.7	13	14:47	
MW-32	1/17/2014	14:13	4.02	1.11	160	0.038	10.27	573	6.50	0.31	52.7	67.2	14:18	
TW-5	6/15/2012	8:35	12.45	10.58	--	--	19.51	37,356	6.89	--	200.8	--	No Sample	Water appeared to be clear, no odor. Well purged dry.
TW-5	12/11/2012	12:28	--	--	100	--	18.81	10,824	6.77	0.47	201.4	3.80	12:30	Purge water appeared to be clear, no odor.
TW-5	2/13/2013	11:26	--	--	120	--	15.00	9,345	6.81	0.42	139.5	1.24	11:30	
TW-5	6/19/2013	13:45	--	--	120	--	17.49	9989	6.48	0.35	71.2	7.13	13:47	
TW-5	5/21/2014	15:50	3.21	0.70	150	0.057	15.94	4435	6.96	0.29	106.5	13.1	15:52	
TW-6	6/15/2012	16:35	11.75	9.08	--	--	18.70	70,000	6.84	1.82	52.3	--	9:25	Water appeared to be clear, no odor. Well purged dry.
TW-6	12/11/2012	10:43	9.24	6.25	120	0.005	17.35	30,924	6.77	--	161.1	--	10:45	Well purged dry at 9:33. Purge water appeared to be very turbid, light gray, with some fine BOS 100 carbon particles, no odor.
TW-6	2/13/2013	10:17	--	--	120	--	15.06	31,150	6.85	1.79	129.3	238	10:40	Well purged dry.
TW-6	6/20/2013	8:50	--	--	--	--	--	--	--	--	--	--	9:34	Well was dry. Meter not working, water was visibly clear.
TW-6	5/21/2014	13:00	--	--	100	--	16.39	19999	7.08	2.26	119.6	154	15:05	Ran dry. Pump stopped.
TW-9	6/15/2012	8:38	11.50	8.65	--	--	19.29	5,900	6.61	--	106.5	--	10:45	Water appeared to be clear, no odor. Well purged dry.
TW-9	12/11/2012	10:25	11.3	8.25	110	0.004	18.17	11,431	7.18	--	127.7	867	15:15	Well purged dry at 10:25. Purge water appeared to be very turbid, gray to black, with some fine BOS 100 carbon particles, no odor.
TW-9	2/13/2013	12:24	--	--	120	--	16.62	13,250	7.48	0.23	108.0	968	12:50	Well purged dry.
TW-9	6/19/2013	10:15	--	--	100	--	17.53	12575	7.17	0.32	155.1	>1000	10:17	Pump intake at approx. 9.5 feet. Water was very turbid, gray.
TW-9	5/21/2014	16:45	7.60	4.92	100	0.005	16.13	10430	7.32	1.39	134.0	>1000	16:47	Purge water appeared to have BOS present.
TW-10	6/14/2012	16:19	11.82	9.17	--	--	18.78	33,286	6.43	0.93	132.7	322	9:25	Water appeared to be turbid, Chlorine odor. Well purged dry.
TW-10	12/11/2012	10:21	11.82	8.08	--	--	17.99	28,006	7.07	0.16	-111.3	600	10:55	Well purged dry. Purge water appeared to be turbid, dark gray to black, with some fine BOS 100 carbon particles, no odor.
TW-10	2/13/2013	12:47	--	--	100	--	15.48	29,090	6.45	0.60	281.6	231	12:55	
TW-10	6/19/2013	15:04	--	--	100	--	17.62	35730	6.68	0.60	193.5	>1000	15:07	Pump intake at approx. 9.5 feet. Water was very turbid, black.
TW-10	5/21/2014	9:32	--	--	100	--	16.24	18867	7.25	0.54	97.8	15	9:35	
TW-11	6/14/2012	14:30	17.29	13.28	--	--	18.34	8,855	6.96	5.87	86.1	134	14:45	Water appeared to be slightly turbid, no odor. Well purged dry.
TW-11	12/11/2012	12:01	--	--	120	--	16.60	7,097	9.50	1.62	-171.7	58	12:10	Purge water appeared to be slightly turbid, light gray, with some fine BOS 100 carbon particles, no odor.
TW-11	2/13/2013	10:55	--	--	100	--	16.59	7,823	6.81	0.43	281.1	105	11:00	
TW-11	6/20/2013	9:30	--	--	100	--	17.14	9274	8.87	0.44	210.9	--	9:32	Pump intake at approx. 13.5 feet. Water was slightly turbid to clear. Turbidimeter flashed 9.99. Possible malfunction.
TW-11	5/21/2014	15:38	--	--	120	--	16.25	12116	8.00	0.37	74.2	12	15:42	
TW-12	6/14/2012	10:25	--	--	--	--	18.16	4,436	6.94	15.2	-117.3	127	10:05	Water appeared to be slightly turbid, slight sweet odor. Well was not purged dry.
TW-12	12/11/2012	10:50	9.03	5.00	120	0.006	19.43	3,656	7.61	0.40	-199.7	32.3	10:55	Purge water appeared to be turbid, light gray, with some fine BOS 100 carbon particles, no odor.
TW-12	2/13/2013	11:55	--	--	100	--	15.92	3754	7.22	0.46	257.6	13.3	12:05	
TW-12	6/19/2013	16:39	--	--	130	--	17.26	4574	7.13	0.24	49.4	89.0	16:42	
TW-12	5/21/2014	10:00	5.39	1.48	150	0.027	16.57	5123	7.10	0.32	155.3	224.0	10:05	Battery died @ 9:40.
TW-13	6/14/2012	14:25	15.81	10.77	--	--	17.75	6,622	6.66	1.05	21.0	353	10:05	Water appeared to be slightly turbid, no odor. Well purged dry.
TW-13	12/11/2012	13:58	--	--	160	--	17.39	2,317	8.64	3.96	-121.9	50	15:50	Well purged dry. Purge water appeared to be turbid, gray to black, with some fine BOS 100 carbon particles, no odor.
TW-13	2/13/2013	11:43	--	--	110	--	16.31	3038	7.88	2.74	298.2	>1000	12:00	Very turbid, fine BOS 100 particulates, no odor. Well dry after purging 1/2 gal.

Table 4
Groundwater Field Parameter Data - 2012-2014
RBTC LDB#1, Leitchfield, Kentucky
AMEC Project No. 6251-12-1002

Well No.	Date	Time	Depth to Water (ft BMP)	Water Level Drawdown (ft)	Purge Rate* (mL/min)	Specific Capacity (gpm/ft)	Temperature (°C)	Specific Conductance (SC) (uS/cm)	pH (S.U.)	Dissolved Oxygen (DO) (mg/L)	Oxidation Reduction Potential (ORP) (mV)	Turbidity (NTU)	Sample Time	Notes
TW-13	6/19/2013	14:40	14.30	10.13	100	0.003	18.00	3563	7.17	1.65	26.7	--	15:55	Meter not working
TW-13	5/21/2014	16:16	--	--	80	--	16.34	2756	7.31	--	90.5	1000	8:50	Ran dry @ 16:20. Sampled on 5/22/2014.
TW-14	6/14/2012	13:30	16.78	11.31	--	--	16.02	4,515	7.83	1.46	36.3	--	No Sample	Water appeared to be slightly turbid, no odor. Well purged dry.
TW-14	12/11/2012	13:50	16.7	11.83	100	0.002	18.12	2422	6.93	0.16	271.3	783	14:20	Well purged dry. Purge water appeared to be very turbid, dark gray to black, with some fine BOS 100 carbon parcides, no odor.
TW-14	2/13/2013	11:10	--	--	110	--	15.91	2,113	7.77	1.40	321.6	95	11:15	Light brown and gray, very fine BOS 100 particulates, no odor.
TW-14	6/19/2013	12:55	8.35	4.01	110	0.007	17.64	2401	6.68	0.1	21.4	42.4	12:55	Meter not working. Used Jacobs meter for final reading.
TW-14	5/21/2014	15:55	8.11	3.71	100	0.007	16.07	2255	6.51	0.29	125.0	317	16:00	
TW-18	1/17/2014	14:57	DRY	--	--	--	--	--	--	--	--	--	15:35	
TW-18	5/21/2014	9:52	--	--	100	--	14.66	6358	6.97	1.81	120.8	466	11:25	Ran dry @ 9:53.
TW-19	1/17/2014	10:02	DRY	--	--	--	13.07	4405	6.62	6.41	281.3	447	10:25	
TW-19	2/13/2014	10:40	--	--	--	--	5.00	4,380	5.94	--	--	--	No Sample	Water cloudy, white ppt, no odor, possible 3DMe
TW-19	2/26/2014	14:21	--	--	--	--	8.00	>2000	6.00	--	--	--	No Sample	3DMe present in purge water
TW-19	5/21/2014	10:21	--	--	150	--	14.47	4458	6.39	1.87	130.0	128	11:31	Ran dry @ 10:22.
SW-1	5/21/2014	18:18	--	--	100	--	16.80	2214	7.35	1.14	110.2	>1000	18:35	Ran dry @ 18:19.
SW-2	5/21/2014	17:17	--	--	100	--	17.00	1349	7.13	2.99	104.7	209	17:55	Ran dry @ 17:18.
SW-3	10/7/2013	9:47	DRY	--	--	--	20.07	12	6.25	6.66	120.5	--	No Sample	Pump started 0948. Ran dry at 0947. Dry at 1100.
SW-3	5/21/2014	10:46	DRY	--	--	--	--	--	--	--	--	--	17:12	Ran dry @ 10:46.
SW-4	10/7/2013	10:58	--	--	100	--	20.12	2491	6.83	0.46	132.0	83	11:00	
SW-4	5/21/2014	11:16	--	--	150	--	15.23	1986	7.22	1.56	110.5	317	9:58	Ran dry @ 11:16. Sampled on 5/22/2014.
Hack Well	6/15/2012	12:30	11.23	0.19	100	0.14	14.24	786	7.17	0.18	27.3	14.1	12:40	Water appeared to be clear with orange and black particles, no odor. Pump intake depth at 30 feet BGS.

Notes:
mL/min: Milliliters per minute
(°C): Degrees Celsius
(uS/cm): MicroSiemens per Centimeter
(mg/L): Milligrams per liter
(S.U.): Standard Units
(mV): Millivolts
(NTU): Nephelometric Turbidity Units

BMP: Below Measuring Point
BGS: Below Ground Surface
SWL: Static Water Level
--: Data not available
*: For wells purged manually with disposable bailer. Purge rate is calculated as total volume of water purged per total purge time and is approximate.

Prepared by: JAM 5/13/14
Checked by: SCW 6/2/2014

Table 5
Remediation Injection Quantities - 3DMe
RBTC L DB 81, Larkfield, Kentucky
AMEC Project 3251[illegible]

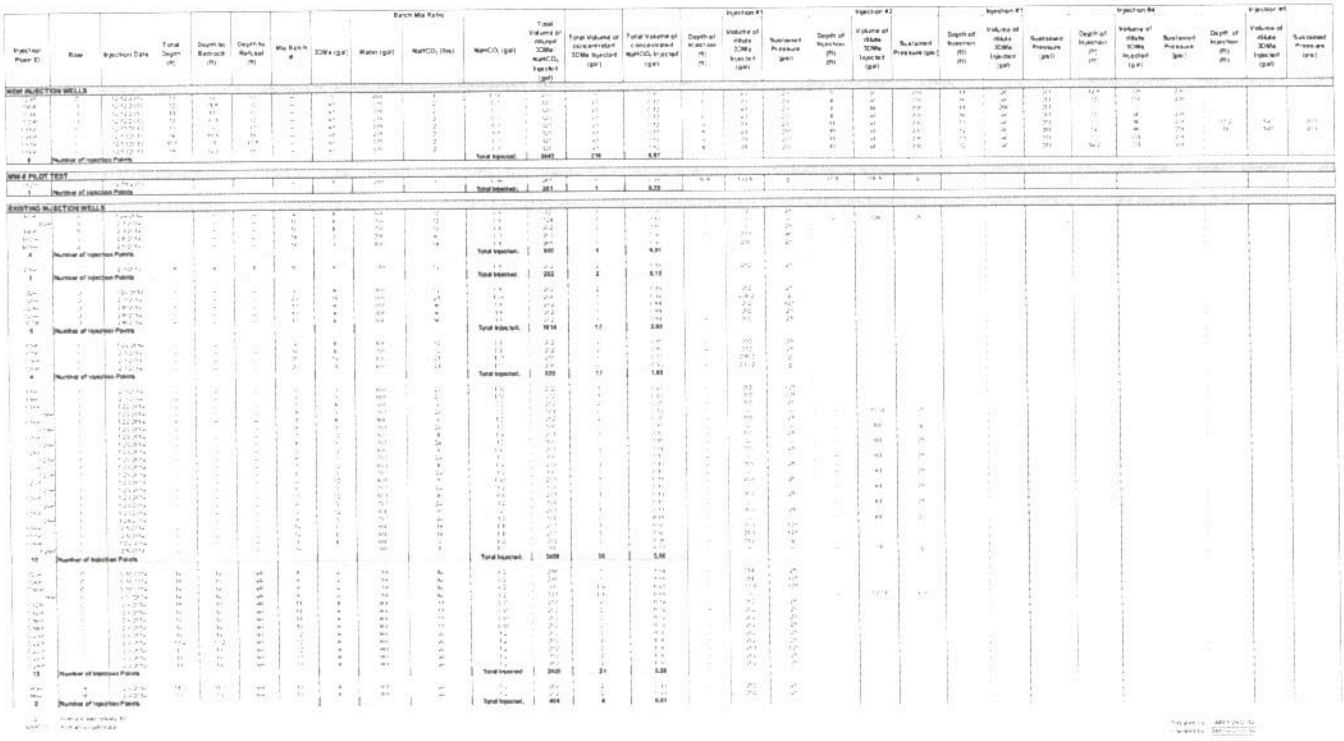


Table 6
3DMe Injection Summary
RBTC LDB #1, Leitchfield, Kentucky
AMEC Project 6251-12-1002

ROW	Number of Injection Points	Total Volume of Diluted 3DMe Injected (gal)	Total Volume of Concentrated 3DMe Injected (gal)	Total Volume of Concentrated $NaHCO_3$ Injected (gal)
B	4	806	8	0.91
C	2	405	5	0.20
D	8	1974	152	2.39
E	4	820	17	1.03
F	18	4949	217	4.39
G	12	2425	21	5.26
H	2	404	4	0.61
Total	**50**	**11784**	**424**	**14.79**

Prepared by JAM 02/25/2014
Checked by SMD 6/23/2014

Notes:
gal Gallon

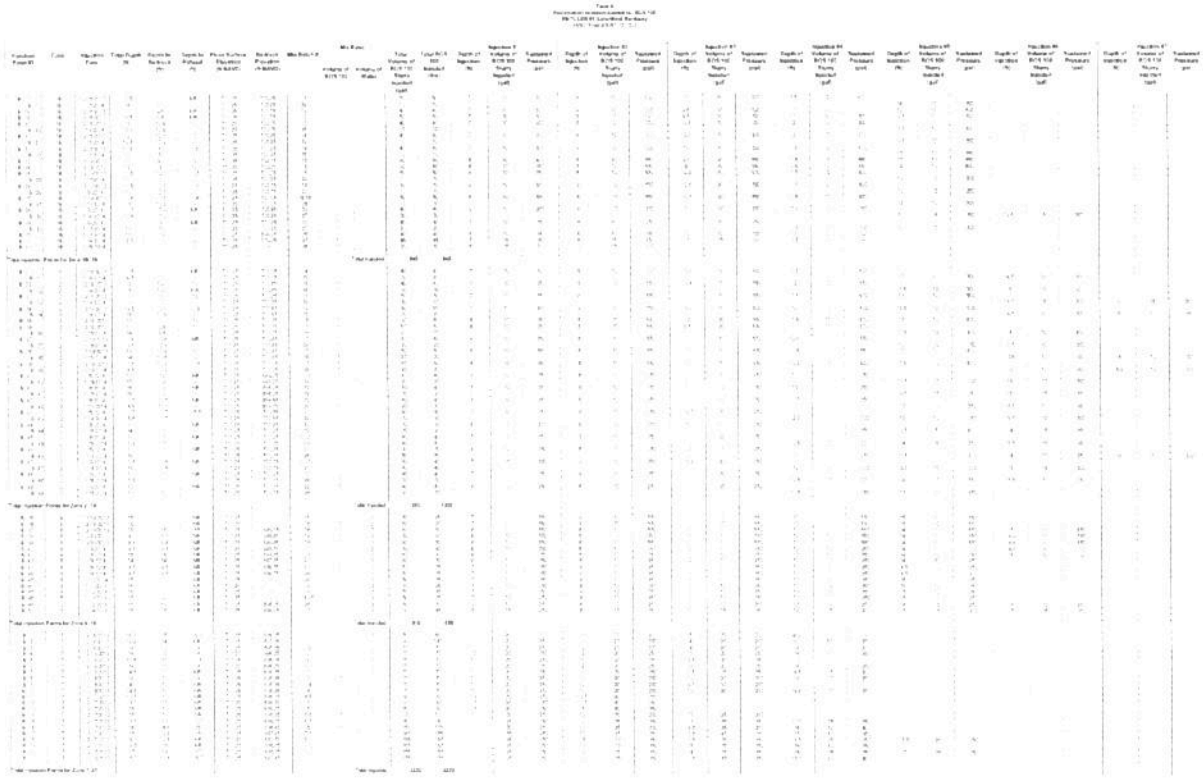


Table 8
BOS 100 Injection Summary
RBTC LDB #1, Leitchfield, Kentucky
AMEC Project 6251-12-1002

Zone	Area (sq ft)	Number of Injection Points	Total BOS 100 Quantity Injected (lbs)
1B	935	16	845
2	990	19	1300
6	1990	16	455
7	990	21	2220
Total		**72**	**4820**

Prepared by JAM 02/25/2014
Checked by SMD 6/23/2014

Notes:
sq ft Square Feet
lbs Pounds

Table 9
Trend Analyses for TCE, Cis-DCE and VC, 2012-2014
RBTC LDR #1, Lexington, Kentucky
AMEC Project No. 6251-12-1007

Trichloroethene (TCE) — MCL 0.005 mg/L

Sample Date	Jun-12	Dec-12	Change*	Feb-13	Change*	Jun-13	Change*	May-14	Change*
BCS-100 Monitoring Wells Primary Source Area									
MW-1A	43	9.6	-77.7%	22	-48.8%	34	-20.9%	1.2	-97.2%
MW-1B	55	0.29	-99.5%	0.11	-99.8%	0.20	-99.6%	0.15	-99.7%
MW-2A	64	0.070	-99.9%	0.11	-99.8%	0.18	-99.8%	0.29	-99.6%
MW-2B	65	0.23	-99.6%	0.17	-99.7%	0.22	-99.7%	0.56	-99.1%
MW-25	2.6	0.48	-81.5%	0.54	-79.2%	1.1	-57.7%	0.68	-73.8%
MW-26	59	0.067	-99.9%	0.12	-99.8%	0.10	-99.8%	0.077	-99.9%
MW-27	58	0.063	-99.9%	0.16	-99.8%	0.0078	-100.0%	0.11	-99.8%
MW-28	0.030	0.00058	-98.1%	0.00050	-98.3%	0.00083	-97.0%	0.00050	-98.3%
TW-8	N/A	0.20	N/A	0.20	N/A	0.22	N/A	0.31	N/A
TW-9	28	0.049	-99.8%	0.14	-99.5%	0.84	-97.0%	0.21	-99.3%
TW-10	13	0.18	-98.6%	0.26	-98.0%	0.29	-97.8%	0.039	-99.7%
TW-11	73	0.027	-100.0%	0.067	-99.9%	0.036	-99.9%	0.0089	-100.0%
TW-12	82	0.074	-99.9%	0.079	-99.9%	0.27	-99.6%	0.70	-99.1%
TW-13	72	1.1	-98.5%	1.1	-98.5%	3.3	-95.4%	3.9	-94.6%
TW-14	N/A	0.12	N/A	0.64	N/A	0.60	N/A	4.3	N/A
Average Change			-98.4%		-98.9%		-99.6%		-98.9%
Biostimulation Monitoring Wells Secondary Source Area									
MW-5	30	2.0	-93.3%	0.13	-99.6%	0.14	-99.5%	3.1	-89.7%
MW-6	8.1	0.50	-93.8%	0.23	-97.2%	0.16	-98.0%	0.025	-99.7%
MW-17	9.5	0.50	-94.7%	0.20	-97.9%	0.20	-97.9%	0.00050	-100.0%
MW-22	9.8	0.050	-99.5%	0.043	-99.6%	0.034	-99.7%	0.0125	-99.9%
Average Change			-95.3%		-98.5%		-98.8%		-97.3%
Biostimulation Monitoring Wells Plume Area									
MW-4	0.13	0.026	-80.0%	0.022	-83.1%	0.0044	-96.6%	0.00067	-99.5%
MW-7	1.5	0.0050	-99.7%	0.00050	-100.0%	0.00050	-100.0%	0.00050	-100.0%
MW-12	0.032	0.0028	-91.3%	0.0038	-88.1%	0.0036	-88.8%	0.0018	-94.4%
MW-13	0.50	0.021	-95.8%	0.037	-92.6%	0.032	-93.6%	0.0029	-99.4%
MW-14	0.00050	0.00050	None	0.00050	None	0.00050	None	0.00050	None
MW-18	0.0046	0.00050	-89.1%	0.00050	-89.1%	0.00050	-89.1%	0.00044	-90.4%
MW-21	0.15	0.020	-86.7%	0.0088	-94.1%	0.0036	-97.6%	0.15	0.0%
MW-23	1.1	0.11	-90.0%	0.051	-95.4%	0.012	-98.9%	0.028	-97.5%
Average Change			-90.4%		-91.8%		-94.9%		-83.0%
Miscellaneous Baseline Wells									
MW-1	0.0017	0.0060	+252.9%	0.00050	-70.59%	0.00050	-70.59%	0.00050	-70.59%
MW-2	0.095	0.20	+110.5%	0.23	+142.1%	0.30	+215.8%	0.63	+563.2%
MW-2M	2.2	0.85	-61.4%	1.7	-22.7%	0.88	-60.00%	7.6	+245.5%
MW-3	0.19	0.0125	-93.4%	0.0017	-99.1%	0.0125	-93.42%	0.014	-92.63%
MW-3M	1.3	0.45	-65.4%	2.8	+115.4%	2.4	+84.6%	0.36	-72.31%
MW-8	0.00050	0.00050	None	0.00050	None	0.00050	None	0.00050	None
MW-8M	0.0014	0.0012	-14.3%	0.00072	-48.6%	0.00094	-32.86%	0.00081	-42.1%
MW-9	0.13	0.022	-83.1%	0.076	-41.5%	0.015	-88.46%	0.025	-80.8%
MW-10M	0.21	0.10	-52.4%	0.064	-69.5%	0.058	-72.38%	0.081	-61.4%
MW-15	0.0063	0.00050	-92.1%	0.00050	-92.1%	0.00050	-92.06%	0.00050	-92.1%
MW-16	0.0014	0.00049	-65.0%	0.00054	-61.4%	0.00054	-61.43%	0.00050	-64.3%
MW-19	0.00095	0.00050	-47.4%	0.00050	-47.4%	0.00050	-47.37%	0.00050	-47.4%
MW-20	0.0050	0.0035	-30.0%	0.0045	-10.0%	0.0037	-26.00%	0.0057	+14.0%
MW-24	0.00050	0.00050	None	0.00050	None	0.00050	None	0.00050	None
PW-1	0.022	0.0093	-57.7%	0.0015	-93.2%	0.0016	-92.73%	0.0017	-92.3%
PW-2	2.9	2.0	-31.0%	1.0	-65.5%	1.4	-51.72%	2.7	-6.9%
KPFR	9.7	15	+54.6%	11	+13.4%	14	+44.3%	10	+3.1%
Average Change			-18.7%		-30.0%		-29.6%		6.9%

cis-1,2-Dichloroethene (cis-1,2-DCE) — MCL 0.07 mg/L

Sample Date	Jun-12	Dec-12	Change*	Feb-13	Change*	Jun-13	Change*	May-14	Change*
BCS-100 Monitoring Wells Primary Source Area									
MW-1A	3.3	2.0	-39.4%	3.0	-9.1%	2.7	-18.2%	0.18	-94.5%
MW-1B	5.0	0.14	-97.2%	0.071	-98.6%	0.069	-98.6%	0.097	-98.1%
MW-2A	5.9	0.032	-99.5%	0.068	-98.8%	0.20	-96.6%	0.37	-93.7%
MW-2B	16	0.43	-97.3%	0.37	-97.7%	0.42	-97.4%	1.7	-89.4%
MW-25	0.75	0.079	-89.9%	0.073	-90.5%	0.12	-84.8%	0.073	-90.6%
MW-26	16	0.064	-99.4%	0.071	-99.3%	0.065	-99.4%	0.097	-99.0%
MW-27	12	0.18	-98.5%	0.20	-98.3%	0.15	-98.9%	0.36	-97.0%
MW-28	0.027	0.001	-96.4%	0.0016	-94.1%	0.0032	-88.1%	0.0017	-93.7%
TW-8	N/A	0.042	N/A	0.045	N/A	0.057	N/A	0.10	N/A
TW-9	12	0.18	-98.5%	0.17	-98.6%	0.53	-95.6%	0.27	-97.7%
TW-10	10	0.17	-98.3%	0.25	-97.5%	0.36	-96.4%	0.022	-99.8%
TW-11	17	0.0036	-100.0%	0.025	-99.9%	0.012	-99.9%	0.0028	-100.0%
TW-12	5.8	0.037	-99.4%	0.12	-97.9%	0.46	-92.1%	0.58	-90.0%
TW-13	16	0.82	-94.8%	1.6	-90.0%	1.6	-90.0%	0.85	-94.7%
TW-14	N/A	0.079	N/A	0.52	N/A	0.48	N/A	2.0	N/A
Average Change			-91.0%		-90.0%		-88.9%		-95.7%
Biostimulation Monitoring Wells Secondary Source Area									
MW-5	9.1	18	+97.8%	32	+251.6%	30	229.7%	5.6	-38.5%
MW-6	0.71	2.9	+308.5%	1.4	+97.2%	1.6	125.4%	2.0	+181.7%
MW-17	4.1	12	+192.7%	14	+241.5%	20	387.8%	0.025	-99.4%
MW-22	0.83	2.8	+237.3%	4.6	+454.2%	6.0	623.9%	1.6	+92.8%
Average Change			209.1%		261.1%		341.4%		34.2%
Biostimulation Monitoring Wells Plume Area									
MW-4	1.5	1.1	-26.7%	0.88	-41.3%	0.029	-98.1%	0.0025	-99.8%
MW-7	0.76	0.49	-35.5%	0.052	-93.2%	0.0079	-99.0%	0.00079	-99.9%
MW-12	0.046	0.024	-47.8%	0.038	-17.4%	0.024	-47.8%	0.013	-71.7%
MW-13	2.9	0.62	-80.0%	0.98	-66.0%	0.78	-66.0%	0.016	-99.2%
MW-14	0.035	0.041	+17.1%	0.035	0.0%	0.023	-34.3%	0.021	-40.0%
MW-18	0.0011	0.00050	-54.5%	0.00050	-54.5%	0.00050	-54.5%	0.00040	-63.6%
MW-21	0.080	0.083	+3.8%	0.12	+50.0%	0.17	+112.5%	0.93	+1062.5%
MW-23	0.068	0.77	+1032.4%	0.69	+914.7%	0.22	+223.5%	0.13	+91.2%
Average Change			102.9%		87.8%		7.8%		84.9%
Miscellaneous Baseline Wells									
MW-1	0.00050	0.00050	None	0.00050	None	0.00050	None	0.00050	None
MW-2	0.053	0.12	+126.4%	0.28	+428.3%	0.26	+390.6%	0.26	+390.6%
MW-2M	0.83	0.33	-60.2%	0.73	-12.0%	0.40	-51.8%	0.20	-75.9%
MW-3	0.11	0.21	+90.9%	0.48	+336.4%	0.13	+18.2%	0.45	+309.1%
MW-3M	0.71	0.31	-56.3%	1.2	+69.0%	1.0	+40.8%	2.2	+209.9%
MW-8	0.00050	0.00050	None	0.00050	None	0.00050	None	0.00050	None
MW-8M	0.0011	0.0011	0.0%	0.00093	-15.5%	0.0010	-9.1%	0.00082	-25.5%
MW-9	1.5	0.99	-34.0%	0.69	-54.0%	0.71	-52.7%	0.44	-70.7%
MW-10M	0.12	0.058	-51.7%	0.14	+16.7%	0.12	0.0%	0.11	-8.3%
MW-15	0.0032	0.00050	-84.4%	0.00050	-84.4%	0.00050	-84.4%	0.00050	-84.4%
MW-16	0.0062	0.0031	-50.0%	0.0031	-50.0%	0.0018	-71.0%	0.0012	-80.6%
MW-19	0.00050	0.00092	+84.0%	0.00050	None	0.00050	None	0.00050	None
MW-20	0.013	0.0078	-40.0%	0.011	-15.4%	0.0052	-60.0%	0.012	-7.7%
MW-24	0.00050	0.00050	+0.0%	0.00050	None	0.00050	None	0.00050	None
PW-1	0.039	0.046	+17.9%	0.0068	-82.6%	0.024	-38.5%	0.010	-74.4%
PW-2	1.7	1.5	-11.8%	1.0	-41.2%	0.86	-49.4%	1.3	-23.5%
KPFR	0.72	0.97	+34.7%	0.88	+22.2%	1.0	+38.9%	0.71	-1.4%
Average Change			-2.3%		39.8%		5.5%		35.2%

Vinyl Chloride (VC) — MCL 0.002 mg/L

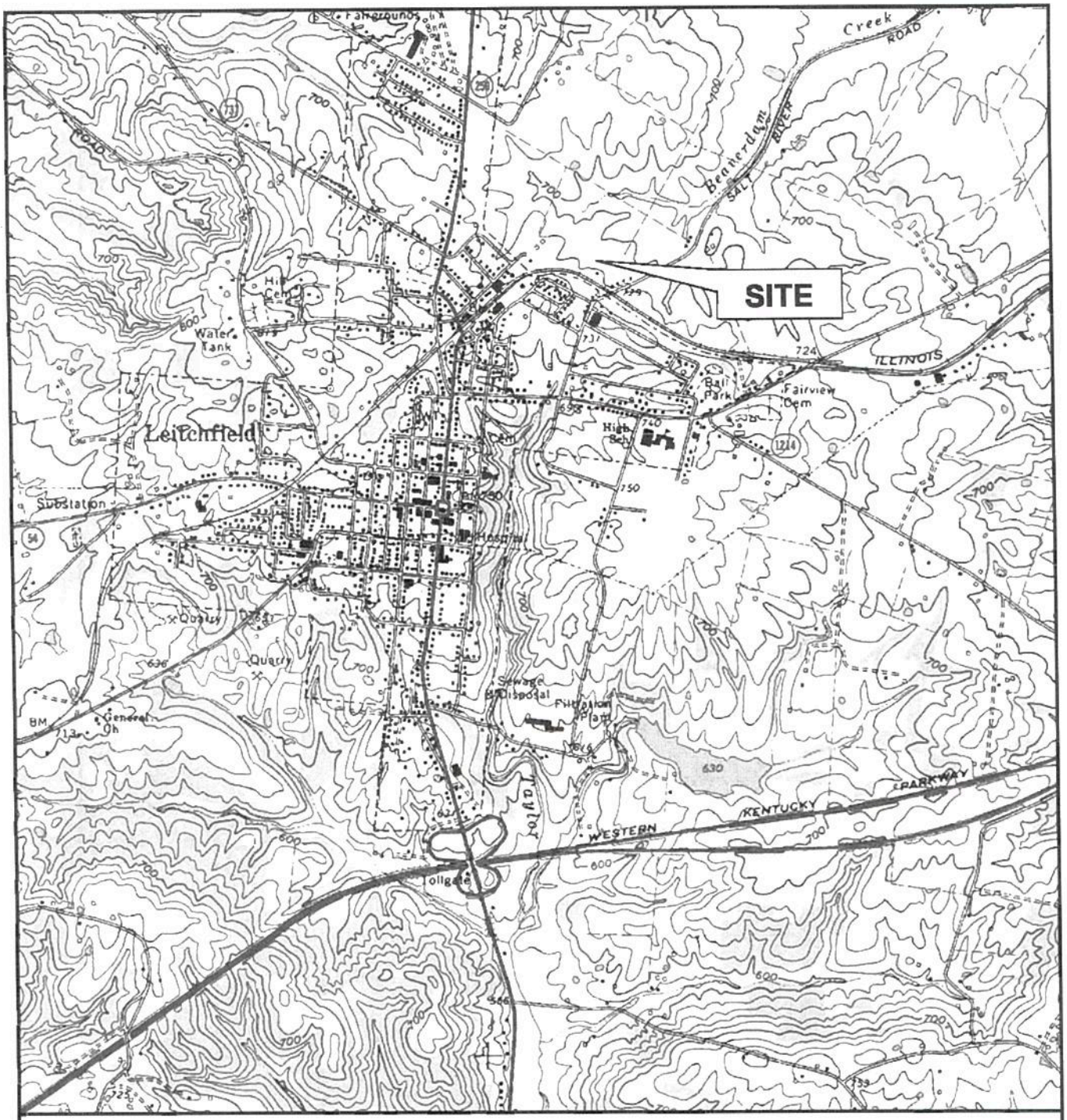
Sample Date	Jun-12	Dec-12	Change*	Feb-13	Change*	Jun-13	Change*	May-14	Change*
BCS-100 Monitoring Wells Primary Source Area									
MW-1A	0.50	0.125	-75.0%	0.25	-50.0%	0.036	-92.8%	0.024	-95.2%
MW-1B	0.50	0.027	-94.6%	0.021	-95.8%	0.011	-97.8%	0.011	-97.8%
MW-2A	0.50	0.0062	-98.8%	0.020	-96.0%	0.019	-96.2%	0.015	-97.0%
MW-2B	2.0	0.026	-98.7%	0.079	-96.1%	0.24	-88.0%	0.25	-87.5%
MW-25	0.0028	0.0050	+78.6%	0.0025	-10.7%	0.0016	-42.9%	0.010	257.1%
MW-26	0.50	0.0087	-98.3%	0.013	-97.4%	0.016	-96.8%	0.011	-97.8%
MW-27	1.6	0.040	-97.5%	0.052	-96.8%	0.052	-96.8%	0.11	-93.1%
MW-28	0.0016	0.0010	-37.5%	0.0033	+106.3%	0.0017	6.3%	0.0012	-25.0%
TW-8	N/A	0.0050	N/A	0.0050	N/A	0.0023	N/A	0.014	N/A
TW-9	0.98	0.022	-97.8%	0.00050	-99.9%	0.012	-98.8%	0.0091	-99.1%
TW-10	1.25	0.011	-99.1%	0.021	-102.1%	0.0095	-99.2%	0.0062	-99.5%
TW-11	0.50	0.00032	-99.9%	0.00070	-100.1%	0.00050	-99.9%	0.00050	-99.9%
TW-12	0.50	0.0084	-98.3%	0.025	-95.0%	0.021	-95.8%	0.034	-93.2%
TW-13	2.8	0.13	-95.4%	0.14	-95.0%	0.082	-97.1%	0.084	-97.0%
TW-14	N/A	0.052	N/A	0.19	N/A	0.17	N/A	1.0	N/A
Average Change			-77.9%		-71.4%		-84.3%		-63.9%
Biostimulation Monitoring Wells Secondary Source Area									
MW-5	0.40	0.29	-27.5%	0.50	+25.0%	3.4	750.0%	1.4	250.0%
MW-6	0.125	0.036	-71.2%	0.023	-103.2%	0.038	-69.6%	0.083	-33.6%
MW-17	0.41	0.54	+31.7%	1.2	+192.7%	1.0	143.9%	0.0094	-97.7%
MW-22	0.011	0.035	+218.2%	0.091	+727.3%	0.098	790.9%	0.56	4990.9%
Average Change			37.8%		210.4%		403.8%		1277.4%
Biostimulation Monitoring Wells Plume Area									
MW-4	0.29	0.13	-55.2%	0.18	-37.9%	0.0089	-97.6%	0.00050	-99.8%
MW-7	0.019	0.051	+168.4%	0.0039	-79.5%	0.0053	-72.1%	0.0016	-91.6%
MW-12	0.00050	0.0016	+220.0%	0.0040	+700.0%	0.0024	380.0%	0.00070	40.0%
MW-13	0.031	0.046	+48.4%	0.12	+287.1%	0.071	129.0%	0.013	-58.1%
MW-14	0.0056	0.0021	-62.5%	0.0023	-58.9%	0.0027	-51.8%	0.0017	-69.6%
MW-18	0.00035	0.00050	+42.9%	0.00050	+42.9%	0.00050	42.9%	0.00058	65.7%
MW-21	0.00050	0.0034	+580.0%	0.0051	+920.0%	0.0026	420.0%	0.012	2300.0%
MW-23	0.00055	0.0050	+809.1%	0.0013	+136.4%	0.0015	172.7%	0.24	[illegible]
Average Change			218.9%		238.7%		115.4%		5702.9%
Miscellaneous Baseline Wells									
MW-1	0.00050	0.00050	None	0.00050	None	0.00050	None	0.00050	None
MW-2	0.0045	0.012	+166.7%	0.072	+1500.0%	0.088	+1855.6%	0.046	+922.2%
MW-2M	0.025	0.0079	-68.4%	0.020	-20.0%	0.0048	-80.8%	0.0055	-78.0%
MW-3	0.0076	0.042	+452.6%	0.082	+978.9%	0.12	+1478.9%	0.13	+1610.5%
MW-3M	0.010	0.0079	-21.0%	0.032	+220.0%	0.0017	-83.0%	0.021	+110.0%
MW-8	0.00050	0.00050	None	0.00050	None	0.00050	None	0.00050	None
MW-8M	0.00050	0.00050	None	0.00050	None	0.00050	None	0.00050	None
MW-9	1.1	0.69	-37.3%	1.2	+9.1%	0.97	-11.8%	0.88	-20.0%
MW-10M	0.0020	0.0016	-20.0%	0.027	+1250.0%	0.0036	+80.0%	0.00051	-74.5%
MW-15	0.00050	0.00050	None	0.00050	None	0.00050	None	0.00050	None
MW-16	0.00080	0.00050	-37.5%	0.00050	-37.5%	0.00050	-37.5%	0.00050	-37.5%
MW-19	0.00050	0.00050	None	0.00050	None	0.00050	None	0.00050	None
MW-20	0.0016	0.00045	-71.9%	0.00071	-53.1%	0.0025	+56.3%	0.0025	+56.3%
MW-24	0.00050	0.00050	None	0.00050	None	0.00050	None	0.00050	None
PW-1	0.0073	0.0083	+13.7%	0.0027	-63.0%	0.0070	-4.1%	0.0082	+12.3%
PW-2	0.029	0.028	-3.4%	0.023	-20.7%	0.026	-10.3%	0.050	+72.4%
KPFR	0.014	0.025	+78.6%	0.030	+114.3%	0.030	+114.3%	0.018	+28.6%
Average Change			61.1%		352.9%		305.2%		236.8%

Notes:

TW-6	TW-6 excluded due to anomalous results from June 2012
Change*	Percent difference from values reported in June 2012
N/A	Not Available or Not Applicable
0.0005	Estimated at 0.5x reporting limit (e.g. <0.010 = 0.0050)
0.13	Detected values are indicated in bold
	Values exceeding the MCL ... are shaded
-80.0%	Decreasing concentration
+97.8%	Increasing concentration
MW-12	Wells potentially benefiting from bioaugmentation at a later date
MW-7	Wells potentially benefiting from oxygen at a later date
MW-22	Wells potentially benefiting from bioaugmentation and oxygen at a later date

Prepared by: ______
Checked by: ______

FIGURES



KENTUCKY
QUADRANGLE LOCATION

SOURCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE MAP, LEITCHFIELD, KENTUCKY, 1967

0 1000 2000
SCALE IN FEET

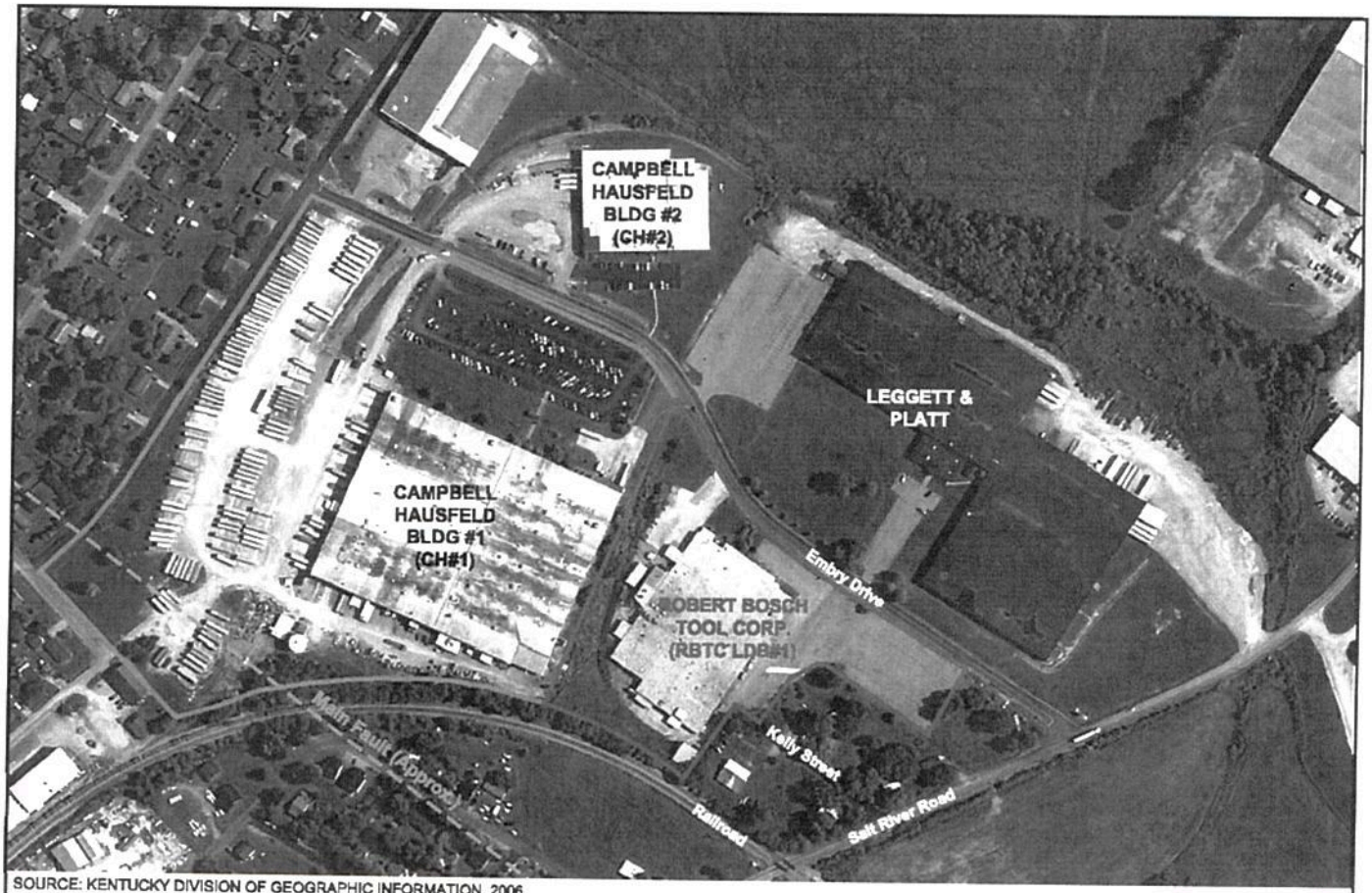
NORTH

amec
2456 Fortune Drive, Suite 100
Lexington, Kentucky 40509
Phone: (859) 255-3308

TOPOGRAPHIC MAP
ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING #1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER: 6251-12-1002

SCALE	1" = 2000'
DATE	03/28/2012
DRAWN BY	KDR
APPROVED BY	SMD

FIG. 1



SOURCE: KENTUCKY DIVISION OF GEOGRAPHIC INFORMATION, 2006

0 150 300
APPROX. SCALE IN FEET

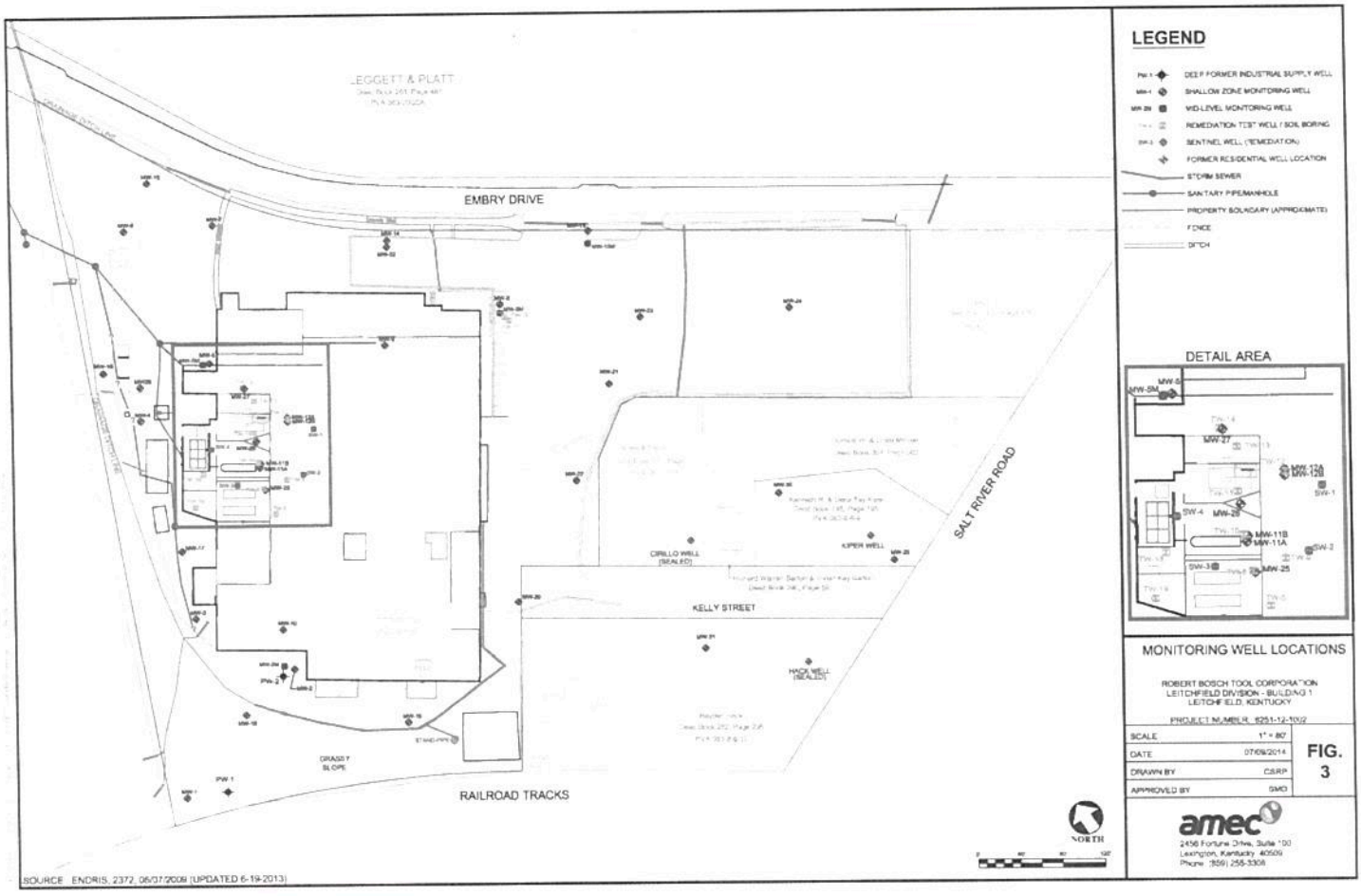
NORTH

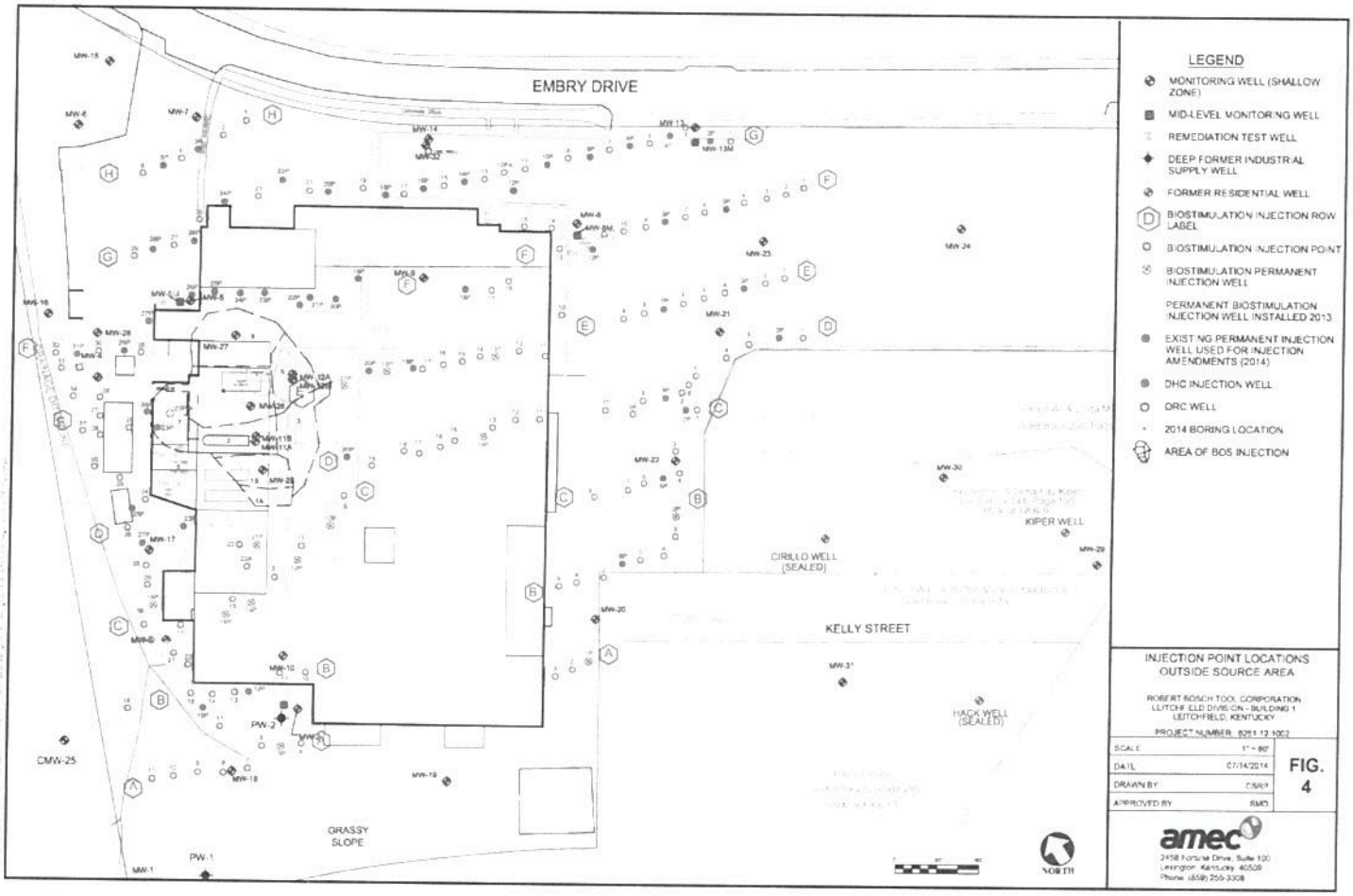
amec
2456 Fortune Drive, Suite 100
Lexington, KY 40509
(859) 255-3308

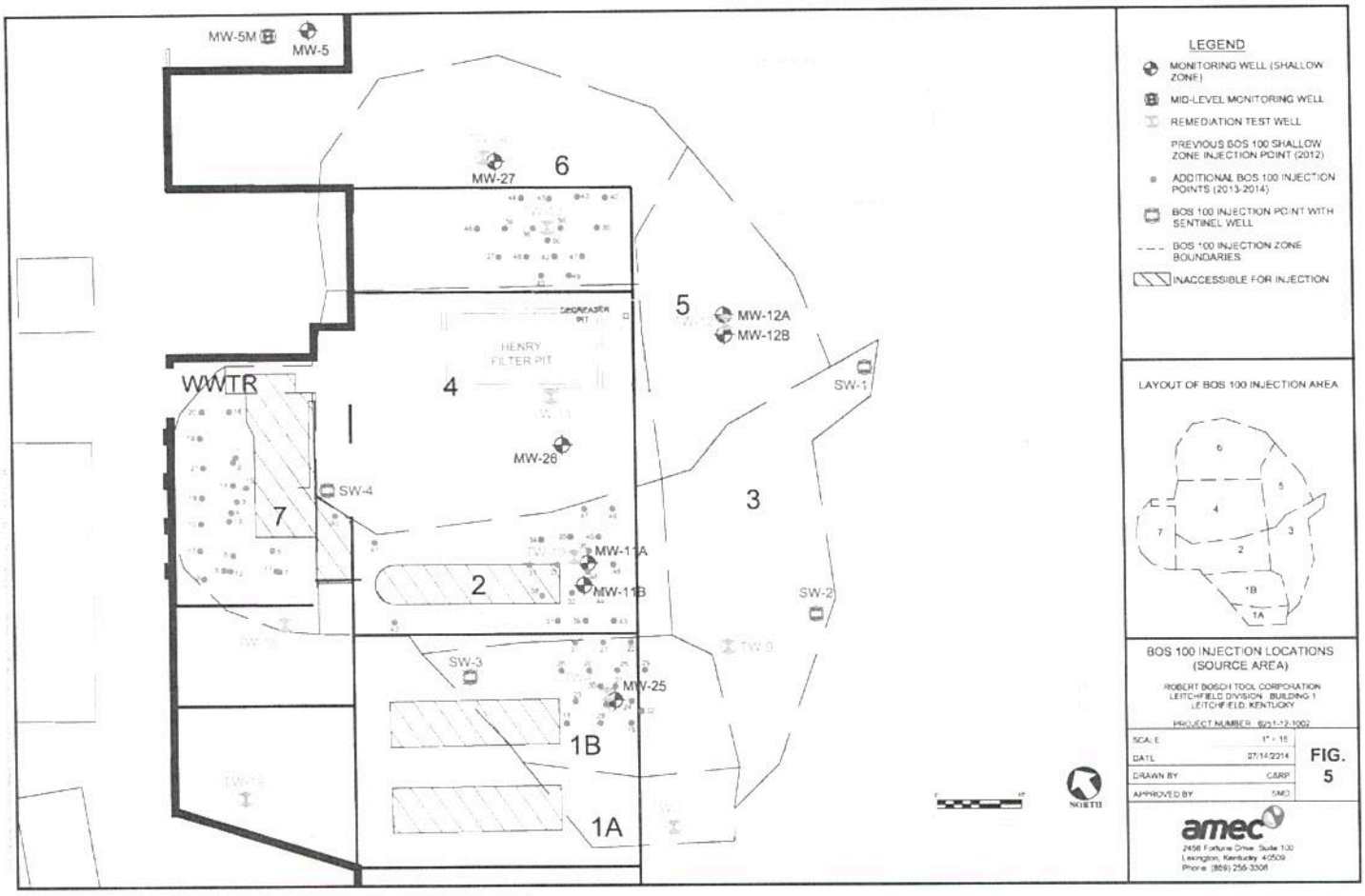
AERIAL PHOTOGRAPH
ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING #1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER: 6251-12-1002

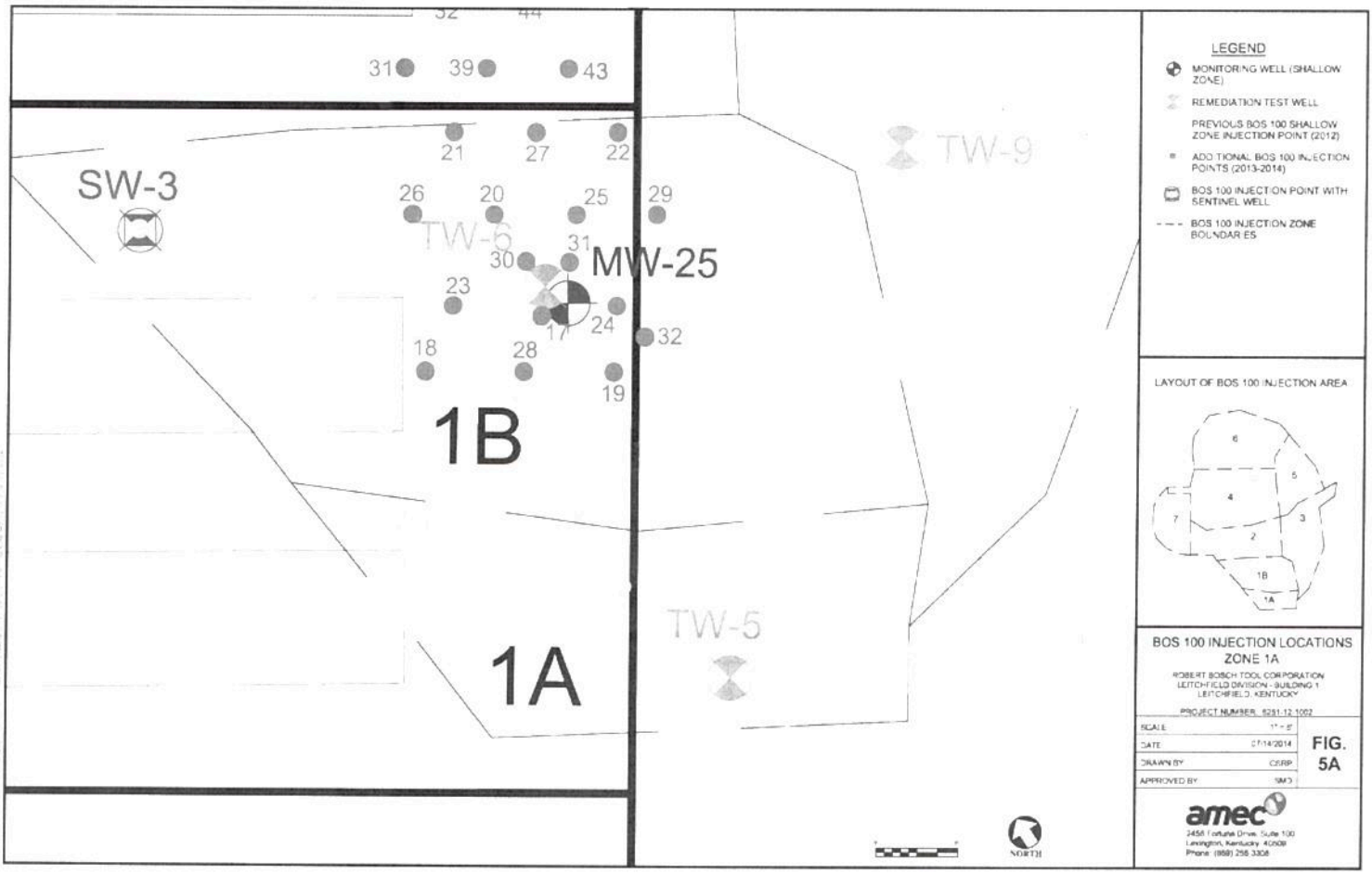
APPROX. SCALE	1" = 300'
DATE	03/28/2012
DRAWN BY	KDR
APPROVED BY	SMD

FIG. 2


LEGGETT & PLATT
EMBRY DRIVE
SALT RIVER ROAD
KELLY STREET
RAILROAD TRACKS
GRASS SLOPE
CIRILLO WELL (SEALED)
KIPER WELL
HACK WELL (SEALED)
NORTH
LEGEND
DEEP FORMER INDUSTRIAL SUPPLY WELL
SHALLOW ZONE MONITORING WELL
MID-LEVEL MONITORING WELL
REMEDIATION TEST WELL / SOIL BORING
SENTINEL WELL (REMEDIATION)
FORMER RESIDENTIAL WELL LOCATION
STORM SEWER
SANITARY PIPE/MANHOLE
PROPERTY BOUNDARY (APPROXIMATE)
FENCE
DITCH
DETAIL AREA
MW-5
MW-5M
MW-27
MW-12B
MW-12A
SW-1
SW-4
MW-28
MW-11B
MW-11A
SW-2
SW-3
MW-25
MONITORING WELL LOCATIONS
ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER: 6251-12-1002
SCALE 1" = 80'
DATE 07/08/2014
DRAWN BY CSRP
APPROVED BY SMD
FIG. 3
amec
2456 Fortune Drive, Suite 100
Lexington, Kentucky 40509
Phone: (859) 255-3308
SOURCE: ENDRIS, 2372, 06/07/2006 (UPDATED 6-19-2013)


EMBRY DRIVE
KELLY STREET
GRASSY SLOPE
CIRILLO WELL (SEALED)
KIPER WELL
HACK WELL (SEALED)
NORTH
LEGEND
MONITORING WELL (SHALLOW ZONE)
MID-LEVEL MONITORING WELL
REMEDIATION TEST WELL
DEEP FORMER INDUSTRIAL SUPPLY WELL
FORMER RESIDENTIAL WELL
BIOSTIMULATION INJECTION ROW LABEL
BIOSTIMULATION INJECTION POINT
BIOSTIMULATION PERMANENT INJECTION WELL
PERMANENT BIOSTIMULATION INJECTION WELL INSTALLED 2013
EXISTING PERMANENT INJECTION WELL USED FOR INJECTION AMENDMENTS (2014)
DHC INJECTION WELL
ORC WELL
2014 BORING LOCATION
AREA OF BOS INJECTION
INJECTION POINT LOCATIONS OUTSIDE SOURCE AREA
ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER: 6251 12 1002
SCALE 1" = 80'
DATE 07/14/2014
DRAWN BY CSAR
APPROVED BY SMD
FIG. 4
amec
2458 Fortune Drive, Suite 100
Lexington, Kentucky 40509
Phone: (859) 255-3308


MW-5M
MW-5
MW-27
6
5
MW-12A
MW-12B
DEGREASER PIT
HENRY FILTER PIT
WWTR
4
SW-1
1
MW-26
SW-4
7
3
MW-11A
MW-11B
2
SW-2
SW-3
MW-25
1B
1A
NORTH
LEGEND
MONITORING WELL (SHALLOW ZONE)
MID-LEVEL MONITORING WELL
REMEDIATION TEST WELL
PREVIOUS BOS 100 SHALLOW ZONE INJECTION POINT (2012)
ADDITIONAL BOS 100 INJECTION POINTS (2013-2014)
BOS 100 INJECTION POINT WITH SENTINEL WELL
BOS 100 INJECTION ZONE BOUNDARIES
INACCESSIBLE FOR INJECTION
LAYOUT OF BOS 100 INJECTION AREA
BOS 100 INJECTION LOCATIONS (SOURCE AREA)
ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION, BUILDING 1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER 6251-12-1002
SCALE 1" = 15'
DATE 07/14/2014
DRAWN BY CSRP
APPROVED BY SMD
FIG. 5
amec
2456 Fortune Drive, Suite 130
Lexington, Kentucky 40509
Phone (859) 256-3306



BOS 100 INJECTION LOCATIONS
ZONE 1A

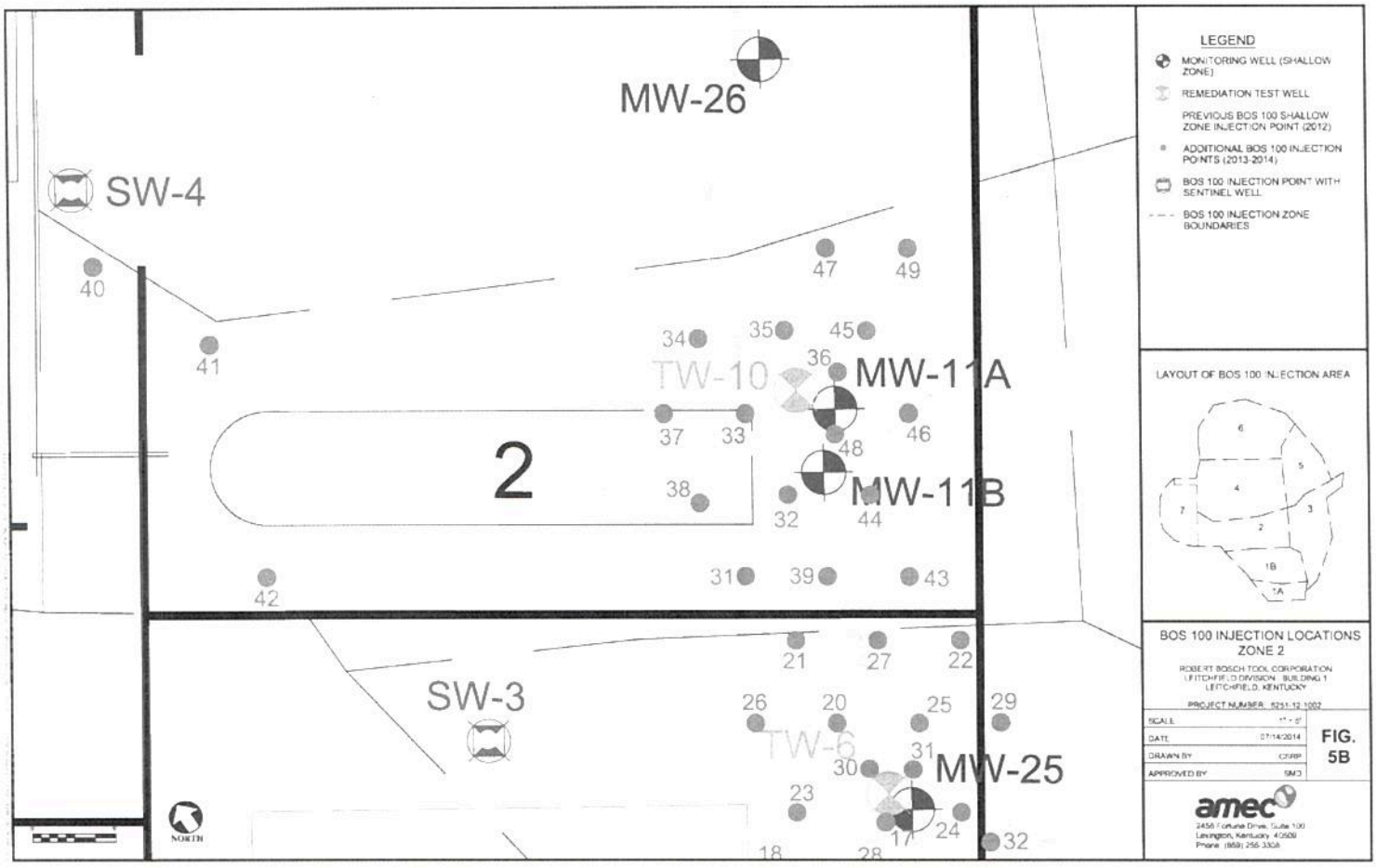
ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY

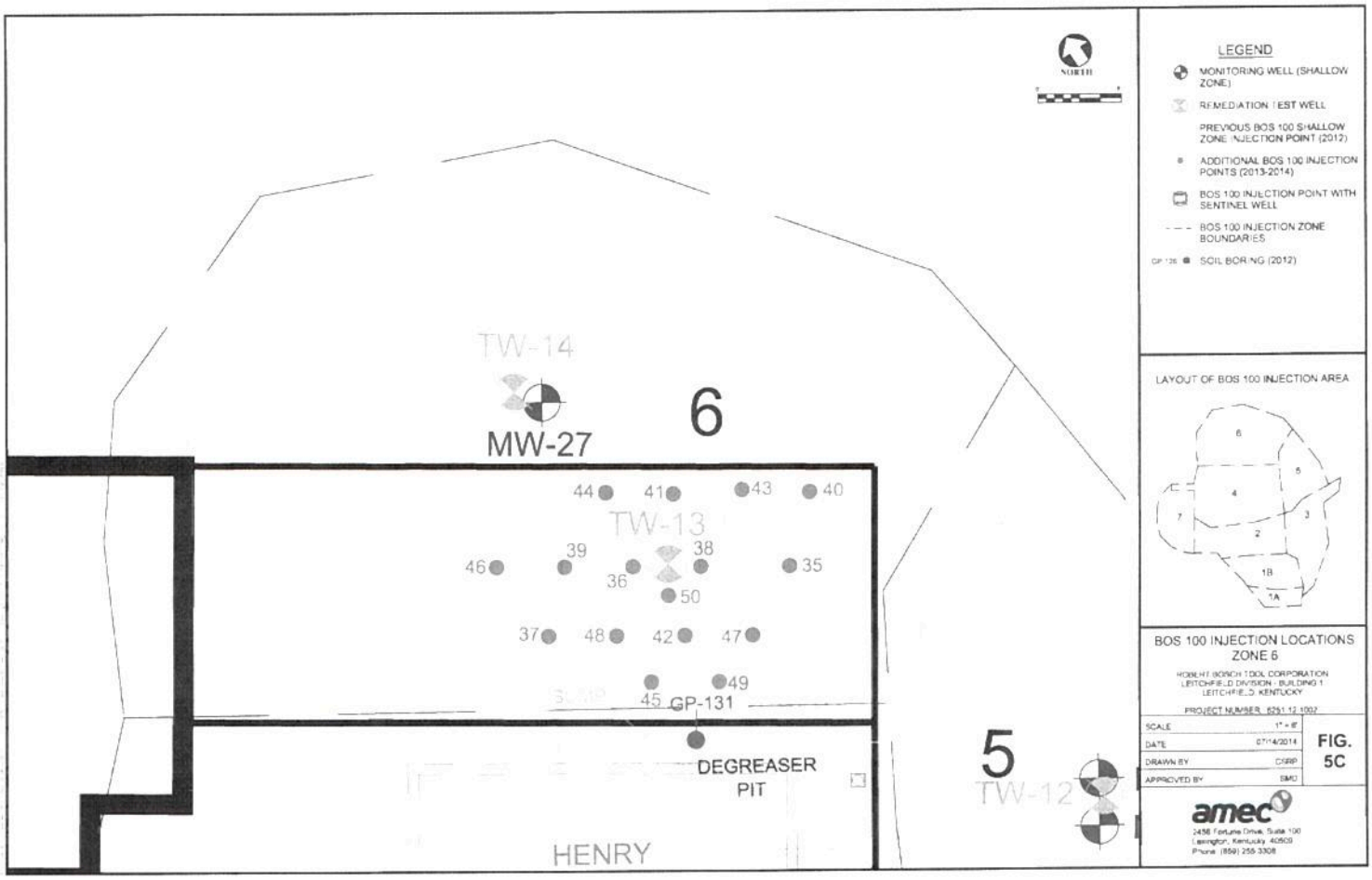
PROJECT NUMBER: 6251-12-1002

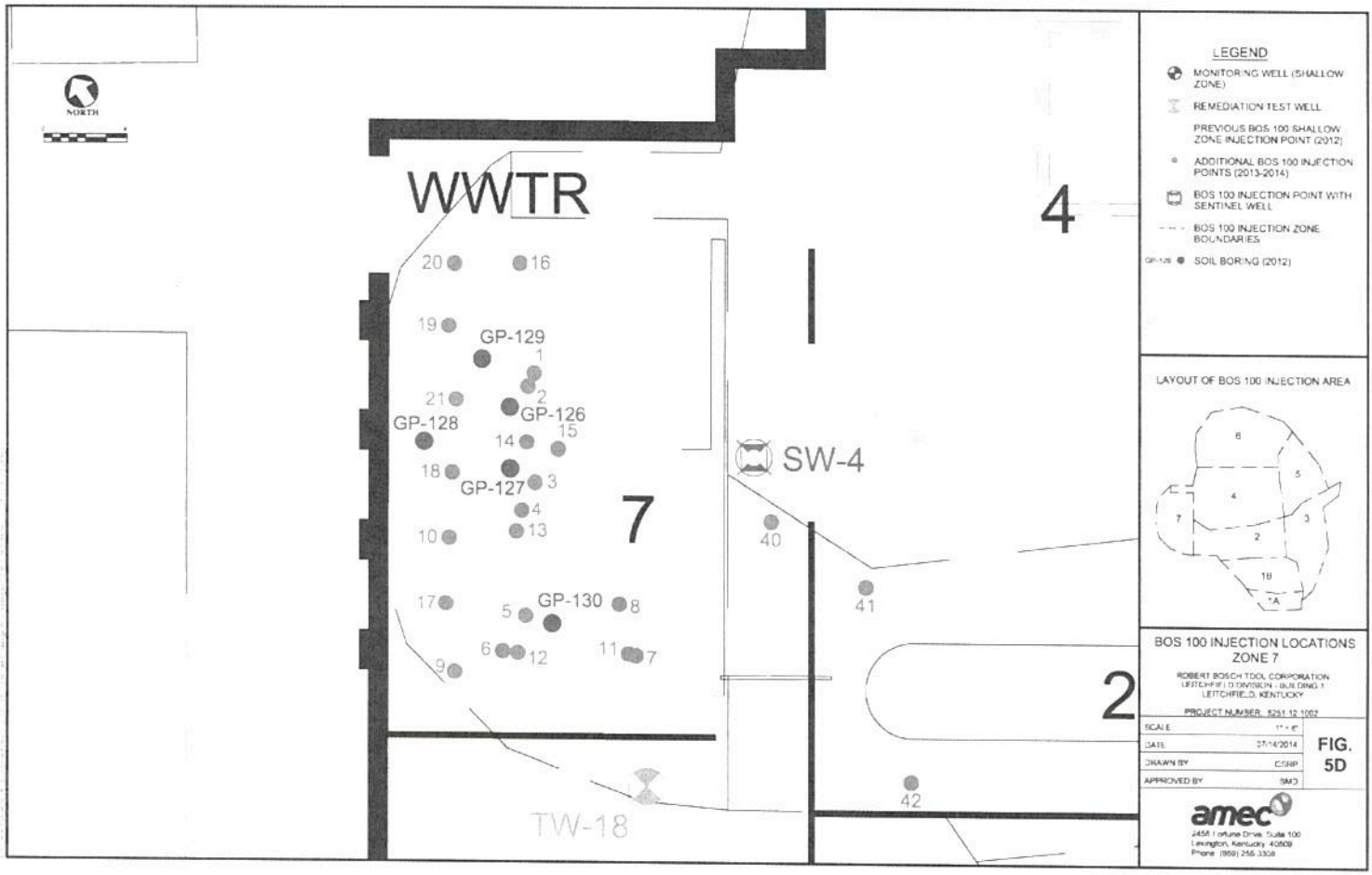
SCALE	1" = 5'
DATE	07/14/2014
DRAWN BY	CERP
APPROVED BY	SMO

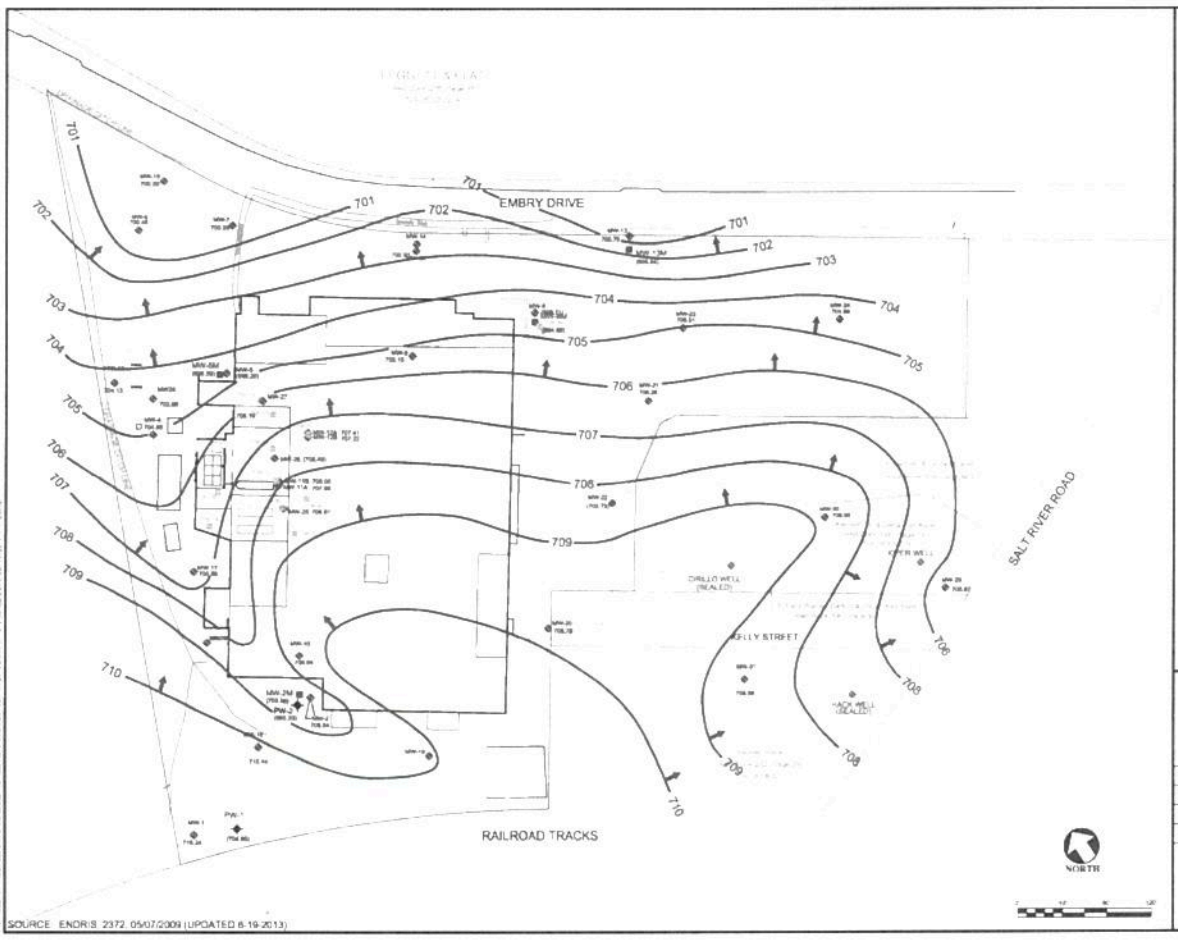
FIG. 5A

amec
2458 Fortune Drive, Suite 100
Lexington, Kentucky 40509
Phone: (859) 255-3308


MW-26
SW-4
40
41
47
49
34
35
45
36
TW-10
MW-11A
37
33
46
48
2
38
MW-11B
32
44
42
31
39
43
21
27
22
SW-3
26
20
25
29
TW-6
31
MW-25
30
23
24
17
32
18
28
NORTH
LEGEND
MONITORING WELL (SHALLOW ZONE)
REMEDIATION TEST WELL
PREVIOUS BOS 100 SHALLOW ZONE INJECTION POINT (2012)
ADDITIONAL BOS 100 INJECTION POINTS (2013-2014)
BOS 100 INJECTION POINT WITH SENTINEL WELL
BOS 100 INJECTION ZONE BOUNDARIES
LAYOUT OF BOS 100 INJECTION AREA
6
5
4
3
7
2
1B
1A
BOS 100 INJECTION LOCATIONS ZONE 2
ROBERT BOSCH TOOL CORPORATION
LITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER: 6251-12-1002
SCALE 1" = 0'
DATE 07/14/2014
DRAWN BY CSRP
APPROVED BY SMO
FIG. 5B
amec
2458 Fortune Drive, Suite 100
Lexington, Kentucky 40509
Phone: (859) 255-3308


NORTH
LEGEND
MONITORING WELL (SHALLOW ZONE)
REMEDIATION TEST WELL
PREVIOUS BOS 100 SHALLOW ZONE INJECTION POINT (2012)
ADDITIONAL BOS 100 INJECTION POINTS (2013-2014)
BOS 100 INJECTION POINT WITH SENTINEL WELL
BOS 100 INJECTION ZONE BOUNDARIES
SOIL BORING (2012)
TW-14
MW-27
6
44
41
43
40
TW-13
39
38
46
35
36
50
37
48
42
47
49
45
GP-131
DEGREASER PIT
5
TW-12
HENRY
LAYOUT OF BOS 100 INJECTION AREA
6
5
4
7
3
2
1B
1A
BOS 100 INJECTION LOCATIONS ZONE 6
ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER: 6251.12-1002
SCALE 1" = 8'
DATE 07/14/2014
DRAWN BY DSRP
APPROVED BY BMD
FIG. 5C
amec
2458 Fortune Drive, Suite 100
Lexington, Kentucky 40509
Phone: (859) 255-3308


NORTH
WWTR
4
1
7
2
SW-4
TW-18
GP-129
GP-126
GP-128
GP-127
GP-130
20
16
19
1
2
21
15
14
18
3
4
10
13
17
5
8
6
12
11
7
9
40
41
42
LEGEND
MONITORING WELL (SHALLOW ZONE)
REMEDIATION TEST WELL
PREVIOUS BOS 100 SHALLOW ZONE INJECTION POINT (2012)
ADDITIONAL BOS 100 INJECTION POINTS (2013-2014)
BOS 100 INJECTION POINT WITH SENTINEL WELL
BOS 100 INJECTION ZONE BOUNDARIES
SOIL BORING (2012)
LAYOUT OF BOS 100 INJECTION AREA
6
5
4
7
3
2
1B
1A
BOS 100 INJECTION LOCATIONS
ZONE 7
ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER: 6251-12-1002
SCALE
DATE 07/14/2014
DRAWN BY CSRP
APPROVED BY SMD
FIG. 5D
amec
2456 Fortune Drive, Suite 100
Lexington, Kentucky 40509
Phone: (859) 255-3308



LEGEND

- DEEP FORMER INDUSTRIAL SUPPLY WELL
- SHALLOW ZONE MONITORING WELL
- MID-LEVEL MONITORING WELL
- REMEDIATION TEST WELL / SOIL BORING (2012)
- PROPERTY BOUNDARY (APPROXIMATE)
- FENCE
- DITCH
- 707.82 — GROUNDWATER ELEVATION IN FEET ABOVE NORTH AMERICAN DATUM OF 1988 (FT NAVD) BASED ON WATER LEVEL DATA COLLECTED ON FEBRUARY 11, 2013 FROM SHALLOW ZONE MONITORING WELLS
- (658.09) — GROUNDWATER ELEVATIONS IN PARENTHESES OMITTED FOR POTENTIOMETRIC CONTOURING (DEEP AND MID-LEVEL WELLS, AND ANOMALOUS SHALLOW ZONE WELLS)
- GROUNDWATER FLOW DIRECTION
- 706 — CONTOUR OF SHALLOW GROUNDWATER LEVEL ELEVATION, UNITS = FT NAVD; CONTOUR INTERVAL = 1 FT

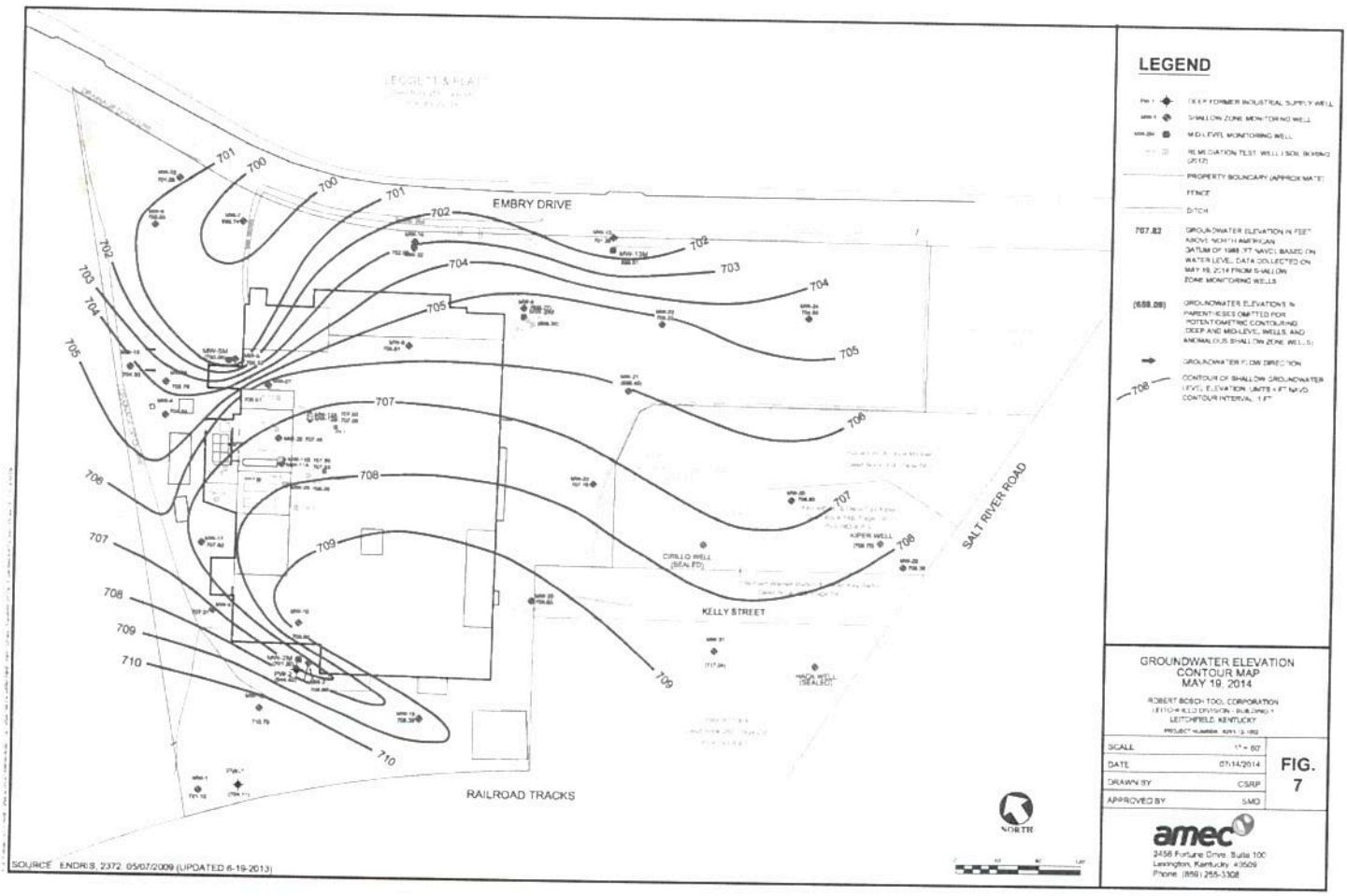
GROUNDWATER ELEVATION CONTOUR MAP DECEMBER 3, 2013

ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER: 4261-13-1002

SCALE	1" = 60'
DATE	07/14/2014
DRAWN BY	CSRP
APPROVED BY	SMD

FIG. 6

amec
2456 Fortune Drive, Suite 100
Lexington, Kentucky 40509
Phone: (859) 255-3308



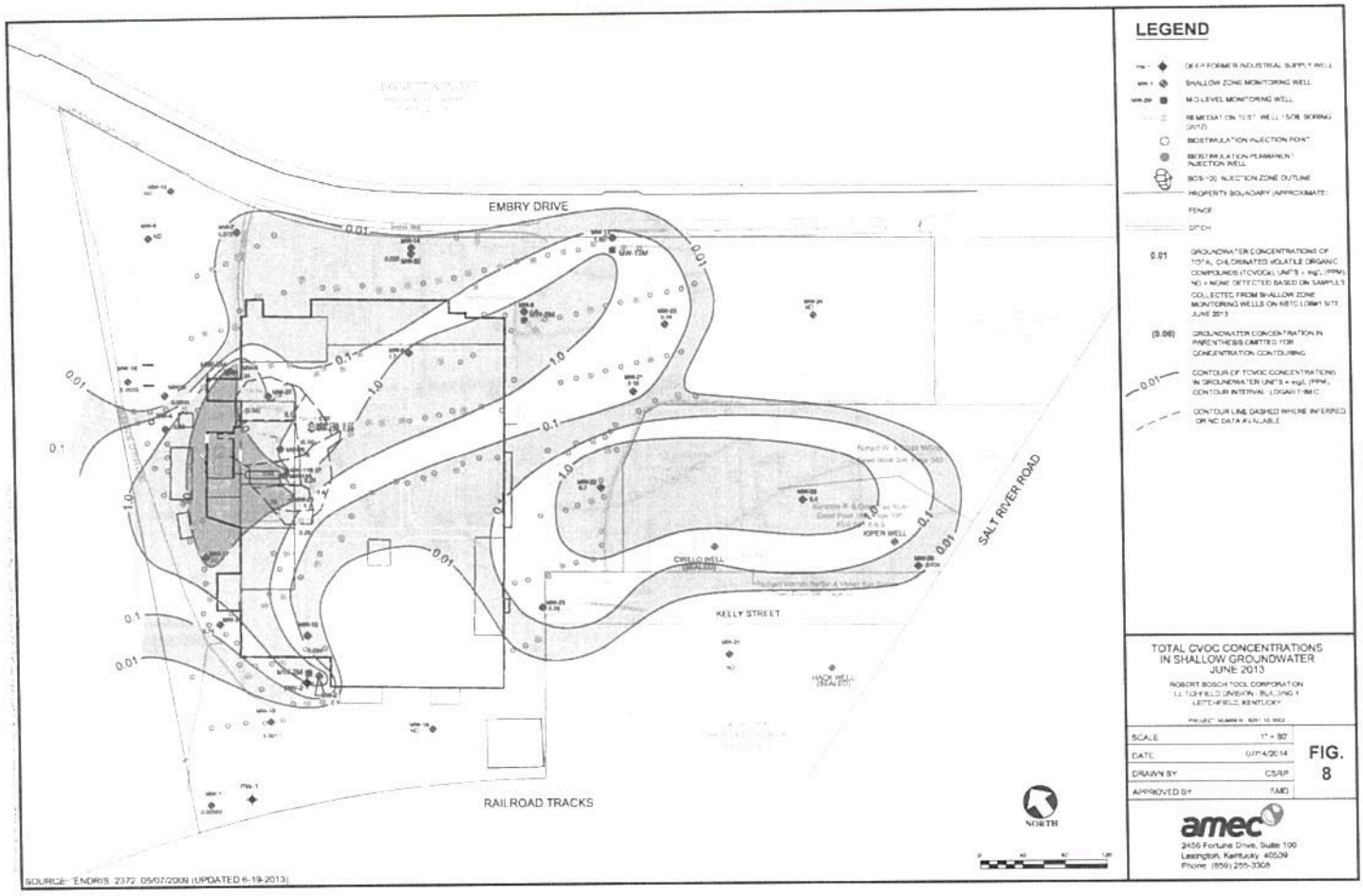
GROUNDWATER ELEVATION CONTOUR MAP
MAY 19, 2014

ROBERT BOSCH TOOL CORPORATION
LEITCH-HILD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY
PROJECT NUMBER: 6251.2-002

SCALE	1" = 80'
DATE	07/14/2014
DRAWN BY	CSRP
APPROVED BY	SMD

FIG. 7

amec
2456 Fortune Drive, Suite 100
Lexington, Kentucky 40509
Phone: (859) 255-3308



LEGEND

- DEEP FORMER INDUSTRIAL SUPPLY WELL
- SHALLOW ZONE MONITORING WELL
- MID-LEVEL MONITORING WELL
- REMEDIATION TEST WELL / SOIL BORING (2012)
- BIOSTIMULATION INJECTION POINT
- BIOSTIMULATION PERMANENT INJECTION WELL
- BOS-100 INJECTION ZONE OUTLINE
- PROPERTY BOUNDARY (APPROXIMATE)
- FENCE
- DITCH
- 0.01 — GROUNDWATER CONCENTRATIONS OF TOTAL CHLORINATED VOLATILE ORGANIC COMPOUNDS (TCVOCs), UNITS = mg/L (PPM). ND = NONE DETECTED BASED ON SAMPLES COLLECTED FROM SHALLOW ZONE MONITORING WELLS ON RBTC LORMT SITE, JUNE 2013
- (0.06) — GROUNDWATER CONCENTRATION IN PARENTHESIS OMITTED FOR CONCENTRATION CONTOURING
- 0.01 — CONTOUR OF TCVOC CONCENTRATIONS IN GROUNDWATER UNITS = mg/L (PPM). CONTOUR INTERVAL: LOGARITHMIC
- CONTOUR LINE DASHED WHERE INFERRED OR NO DATA AVAILABLE

SOURCE: ENDRIS 2372 05/07/2009 (UPDATED 6-19-2013)

TOTAL CVOC CONCENTRATIONS IN SHALLOW GROUNDWATER JUNE 2013

ROBERT BOSCH TOOL CORPORATION
LITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY

PROJECT NUMBER: 6251-12-1002

SCALE	1" = 80'
DATE	07/14/2014
DRAWN BY	CSRP
APPROVED BY	SMD

FIG. 8

amec
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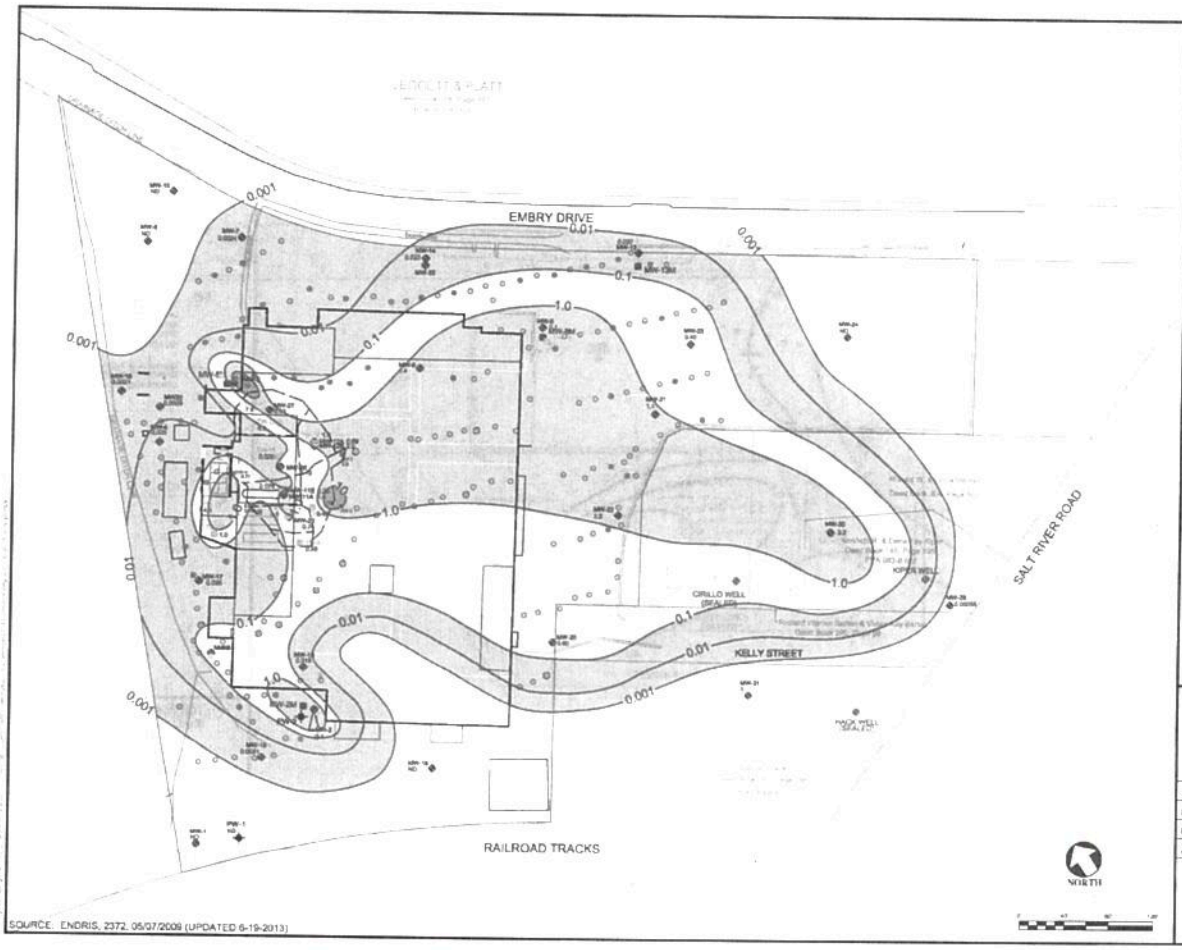
Lexington, Kentucky 40509
Phone: (859) 255-3308



LEGEND

- DEEP FORMER INDUSTRIAL SUPPLY WELL
- SHALLOW ZONE MONITORING WELL
- MULTI-LEVEL MONITORING WELL
- REMEDIATION TEST WELL / SOIL BORING (2012)
- BIOSTIMULATION INJECTION POINT
- BIOSTIMULATION PERMANENT INJECTION (INJECTION WELL)
- PERMANET BIOSTIMULATION INJECTION WELL INSTALLED 2013
- EXISTING PERMANENT INJECTION WELL USED FOR INJECTION AMENDMENTS (2014)
- SOIL INJECTION WELL
- SOIL-1.00 INJECTION ZONE OUTLINE
- PROPERTY BOUNDARY (APPROXIMATE)
- FENCE
- DITCH
- 0.01 GROUNDWATER CONCENTRATIONS OF TOTAL CHLORINATED VOLATILE ORGANIC COMPOUNDS (TCVOCs) IN UG/L = mg/l (PPM) ND = NONE DETECTED BASED ON SAMPLES COLLECTED FROM SHALLOW ZONE MONITORING WELLS ON ABTC LDMH SITE, MAY 2013
- (0.05) GROUNDWATER CONCENTRATION IN PARENTHESIS OMITTED FOR CONCENTRATION CONTOURING
- 0.01 CONTOUR OF TCVOC CONCENTRATIONS IN GROUNDWATER UNITS = mg/l (PPM) CONTOUR INTERVAL: LOGARITHMIC
- CONTOUR LINE DASHED WHERE INFERRED OR NO DATA AVAILABLE

TOTAL CVOC CONCENTRATIONS IN SHALLOW GROUNDWATER MAY 2014

ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY

PROJECT NUMBER: 6251-12-003

SCALE	1" = 80'
DATE	07/14/2014
DRAWN BY	CSRP
APPROVED BY	SMD

FIG. 9

amec
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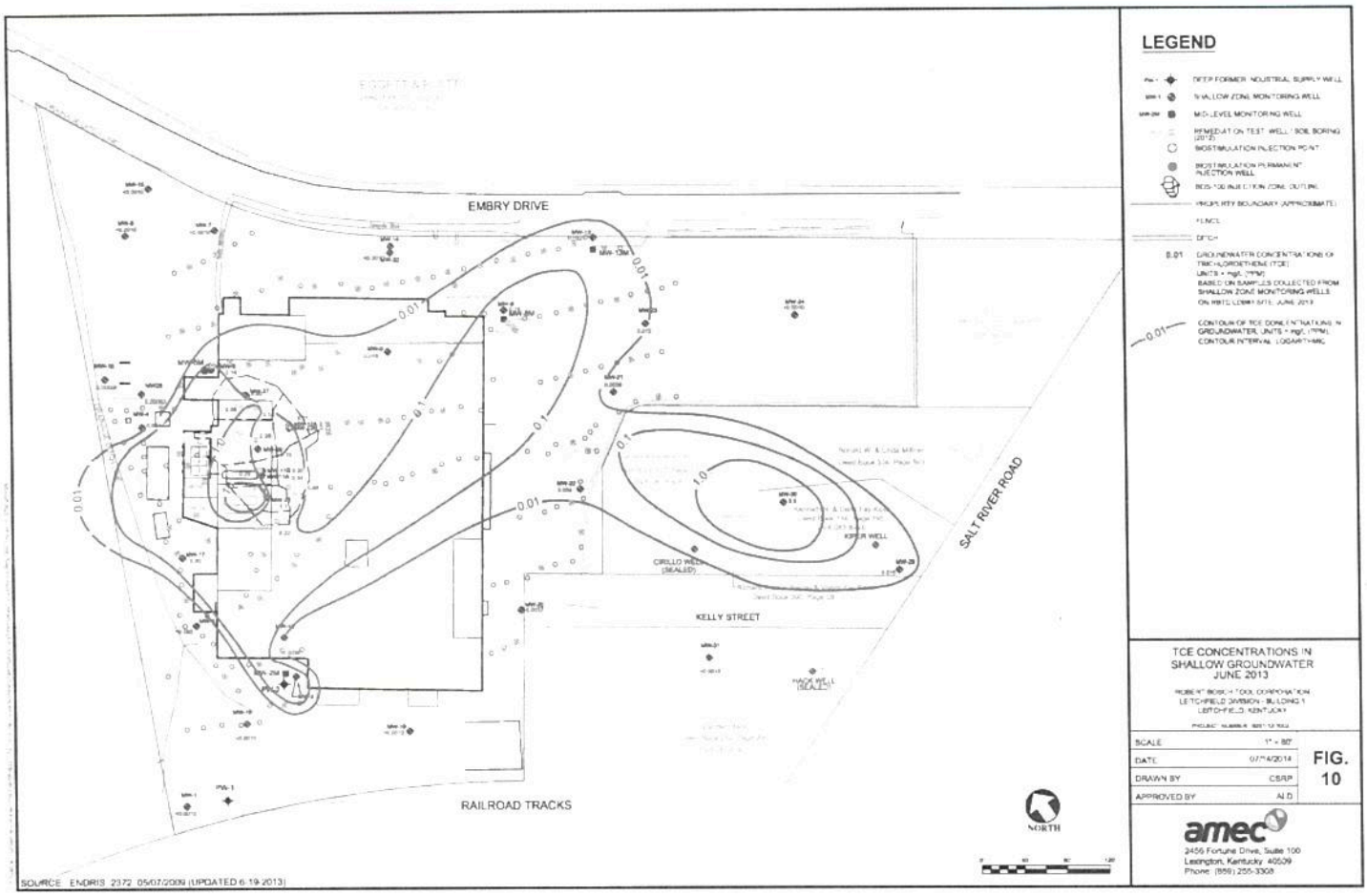
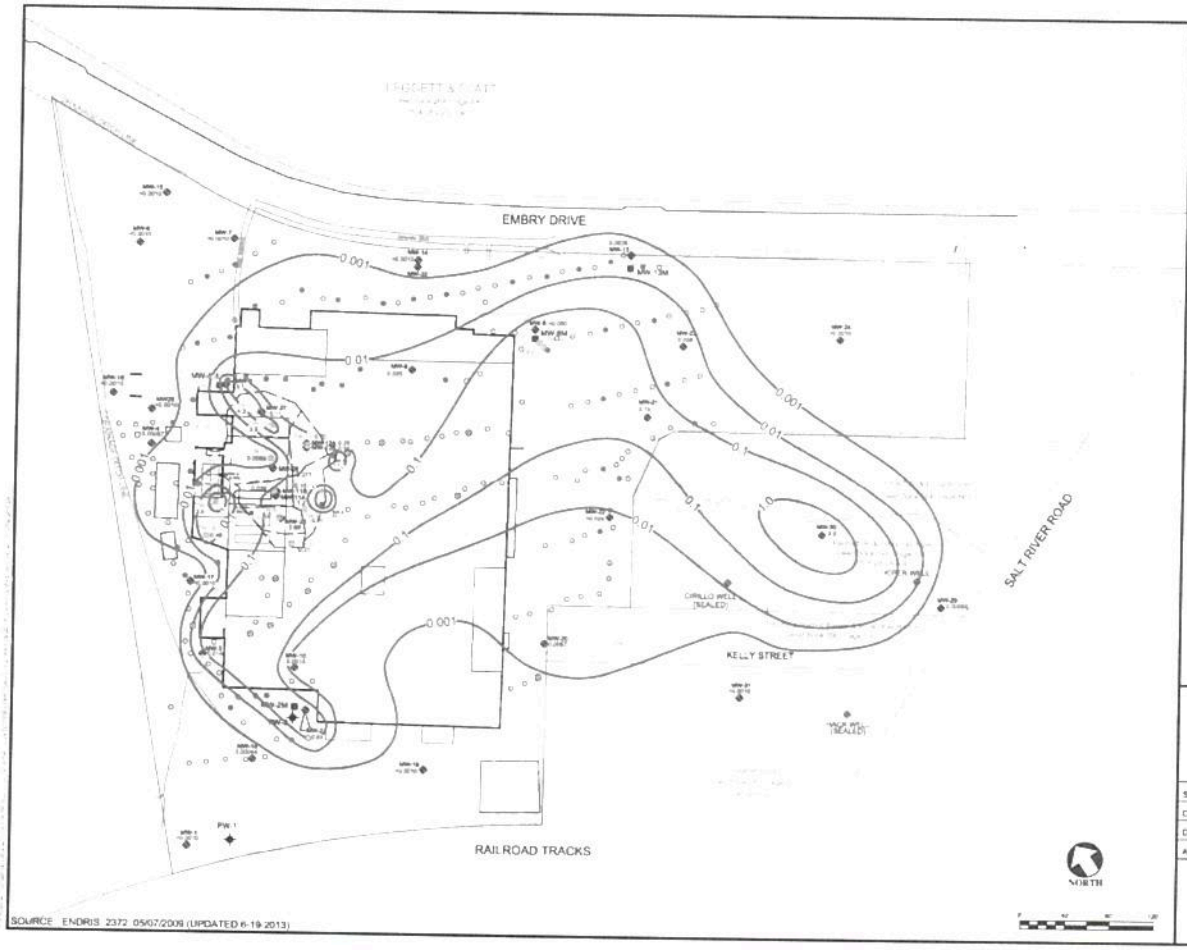
Phone: (859) 255-3308


EMBRY DRIVE
KELLY STREET
RAILROAD TRACKS
SALT RIVER ROAD
CIRILLO WELL (SEALED)
KIRBY WELL
HAGE WELL (SEALED)
NORTH
SOURCE: ENDRIS 2372 05/07/2009 (UPDATED 6-19-2013)
LEGEND
DEEP FORMER INDUSTRIAL SUPPLY WELL
SHALLOW ZONE MONITORING WELL
MID-LEVEL MONITORING WELL
REMEDIATION TEST WELL / SOIL BORING (2012)
BIOSTIMULATION INJECTION POINT
BIOSTIMULATION PERMANENT INJECTION WELL
BDS-100 INJECTION ZONE OUTLINE
PROPERTY BOUNDARY (APPROXIMATE)
FENCE
DITCH
0.01 GROUNDWATER CONCENTRATIONS OF TRICHLOROETHENE (TCE) UNITS = mg/L (PPM) BASED ON SAMPLES COLLECTED FROM SHALLOW ZONE MONITORING WELLS ON WBTC LOBMH SITE, JUNE 2013
0.01 CONTOUR OF TCE CONCENTRATIONS IN GROUNDWATER, UNITS = mg/L (PPM) CONTOUR INTERVAL: LOGARITHMIC
TCE CONCENTRATIONS IN SHALLOW GROUNDWATER JUNE 2013
"ROBERT BOSCH TOOL CORPORATION LITCHFIELD (MIBBCH) BUILDING 1 LITCHFIELD, KENTUCKY
SCALE 1" = 80'
DATE 07/14/2014
DRAWN BY CBP
APPROVED BY ALD
FIG. 10
amec
2456 Fortune Drive, Suite 100
Lexington, Kentucky 40509
Phone: (859) 255-3308



SOURCE: ENDRIS 2372 05/07/2009 (UPDATED 6-19-2013)

LEGEND

- DEEP FORMER INDUSTRIAL SUPPLY WELL
- SHALLOW ZONE MONITORING WELL
- MEDIUM ZONE MONITORING WELL
- REMEDIATION TEST WELL / SOIL BORING (2012)
- BIOSTIMULATION INJECTION POINT
- BIOSTIMULATION PERMANENT INJECTION WELL
- PERMANENT BIOSTIMULATION INJECTION WELL INSTALLED 2013
- EXISTING PERMANENT INJECTION WELL USED FOR INJECTION AMENDMENTS (2014)
- SOI INJECTION WELL
- SOI-100 INJECTION ZONE OUTLINE
- PROPERTY BOUNDARY (APPROXIMATE)
- FENCE
- DITCH
- 0.01 GROUNDWATER CONCENTRATIONS OF TRICHLOROETHENE (TCE) UNITS = mg/L (PPM) BASED ON SAMPLES COLLECTED FROM SHALLOW ZONE MONITORING WELLS ON RBTC (2981) SITE, MAY 2014
- 0.01 CONTOUR OF TCE CONCENTRATIONS IN GROUNDWATER, UNITS = mg/L (PPM) CONTOUR INTERVAL LOGARITHMIC

TCE CONCENTRATIONS IN SHALLOW GROUNDWATER MAY 2014

ROBERT BOSCH TOOL CORPORATION
LEITCHFIELD DIVISION - BUILDING 1
LEITCHFIELD, KENTUCKY

PROJECT NUMBER: 6511-12-1002

SCALE	1" = 80'
DATE	07/14/2014
DRAWN BY	CS/JP
APPROVED BY	TMD

FIG. 11

amec
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Lexington, Kentucky 40509
Phone: (859) 255-3308

APPENDICES

APPENDIX A

Laboratory Analytical Report – Groundwater Samples October 2013

ESC
LAB SCIENCES
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12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexington
2456 Fortune Drive; Ste 100
Lexington, KY 40509

Report Summary

Thursday October 17, 2013

Report Number: L661920
Samples Received: 10/08/13
Client Project: 6251-12-1002

Description: RBTC - Leitchfield, KY

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Leslie Newton

Leslie Newton , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.
Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

ESC LAB SCIENCES
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1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

October 17, 2013

Date Received : October 08, 2013
Description : RBTC - Leitchfield, KY

ESC Sample # : L661920-01

Sample ID : MW-5

Site ID :

Collected By : Jacob A. Morris
Collection Date : 10/07/13 16:35

Project # : 6251-12-1002

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TOC (Total Organic Carbon)	260	0.97	5.0	mg/l		9060A	10/14/13	5
Volatile Organics								
Acetone	U	2.5	13.	mg/l		8260B	10/10/13	250
Acrolein	U	2.2	13.	mg/l		8260B	10/10/13	250
Acrylonitrile	U	0.47	2.5	mg/l		8260B	10/10/13	250
Benzene	U	0.083	0.25	mg/l		8260B	10/10/13	250
Bromobenzene	U	0.088	0.25	mg/l		8260B	10/10/13	250
Bromodichloromethane	U	0.095	0.25	mg/l		8260B	10/10/13	250
Bromoform	U	0.12	0.25	mg/l		8260B	10/10/13	250
Bromomethane	U	0.22	1.3	mg/l		8260B	10/10/13	250
n-Butylbenzene	U	0.090	0.25	mg/l		8260B	10/10/13	250
sec-Butylbenzene	U	0.091	0.25	mg/l		8260B	10/10/13	250
tert-Butylbenzene	U	0.10	0.25	mg/l		8260B	10/10/13	250
Carbon tetrachloride	U	0.095	0.25	mg/l		8260B	10/10/13	250
Chlorobenzene	U	0.087	0.25	mg/l		8260B	10/10/13	250
Chlorodibromomethane	U	0.082	0.25	mg/l		8260B	10/10/13	250
Chloroethane	U	0.11	1.3	mg/l		8260B	10/10/13	250
2-Chloroethyl vinyl ether	U	0.75	13.	mg/l		8260B	10/10/13	250
Chloroform	U	0.081	1.3	mg/l		8260B	10/10/13	250
Chloromethane	U	0.069	0.63	mg/l		8260B	10/10/13	250
2-Chlorotoluene	U	0.094	0.25	mg/l		8260B	10/10/13	250
4-Chlorotoluene	U	0.088	0.25	mg/l		8260B	10/10/13	250
1,2-Dibromo-3-Chloropropane	U	0.33	1.3	mg/l		8260B	10/10/13	250
1,2-Dibromoethane	U	0.095	0.25	mg/l		8260B	10/10/13	250
Dibromomethane	U	0.086	0.25	mg/l		8260B	10/10/13	250
1,2-Dichlorobenzene	U	0.087	0.25	mg/l		8260B	10/10/13	250
1,3-Dichlorobenzene	U	0.055	0.25	mg/l		8260B	10/10/13	250
1,4-Dichlorobenzene	U	0.068	0.25	mg/l		8260B	10/10/13	250
Dichlorodifluoromethane	U	0.14	1.3	mg/l		8260B	10/10/13	250
1,1-Dichloroethane	0.067	0.065	0.25	mg/l	J	8260B	10/10/13	250
1,2-Dichloroethane	U	0.090	0.25	mg/l		8260B	10/10/13	250
1,1-Dichloroethene	0.11	0.10	0.25	mg/l	J	8260B	10/10/13	250
cis-1,2-Dichloroethene	18.	0.065	0.25	mg/l		8260B	10/10/13	250
trans-1,2-Dichloroethene	U	0.099	0.25	mg/l	J4	8260B	10/10/13	250
1,2-Dichloropropane	U	0.076	0.25	mg/l		8260B	10/10/13	250
1,1-Dichloropropene	U	0.088	0.25	mg/l		8260B	10/10/13	250
1,3-Dichloropropane	U	0.092	0.25	mg/l		8260B	10/10/13	250
cis-1,3-Dichloropropene	U	0.10	0.25	mg/l		8260B	10/10/13	250
trans-1,3-Dichloropropene	U	0.10	0.25	mg/l		8260B	10/10/13	250
2,2-Dichloropropane	U	0.080	0.25	mg/l		8260B	10/10/13	250
Di-isopropyl ether	U	0.080	0.25	mg/l		8260B	10/10/13	250
Ethylbenzene	U	0.096	0.25	mg/l		8260B	10/10/13	250

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
The reported analytical results relate only to the sample submitted.

Reported: 10/17/13 16:29 Printed: 10/17/13 16:30

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Est. 1970

REPORT OF ANALYSIS

October 17, 2013

Ms. Saran Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

ESC Sample # : L661920-01

Date Received : October 08, 2013
Description : RBIC - Leitchfield, KY

Site ID :

Sample ID : MW-5

Project # : 6251-12-1002

Collected By : Jacob A. Morris
Collection Date : 10/07/13 16:35

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Hexachloro-1,3-butadiene	U	0.064	0.25	mg/l		8260B	10/10/13	250
Isopropylbenzene	U	0.082	0.25	mg/l		8260B	10/10/13	250
p-Isopropyltoluene	U	0.088	0.25	mg/l		8260B	10/10/13	250
2-Butanone (MEK)	U	0.98	2.5	mg/l		8260B	10/10/13	250
Methylene Chloride	U	0.25	1.3	mg/l		8260B	10/10/13	250
4-Methyl-2-pentanone (MIBK)	U	0.54	2.5	mg/l		8260B	10/10/13	250
Methyl tert-butyl ether	U	0.092	0.25	mg/l		8260B	10/10/13	250
Naphthalene	U	0.25	1.3	mg/l		8260B	10/10/13	250
n-Propylbenzene	U	0.087	0.25	mg/l		8260B	10/10/13	250
Styrene	U	0.077	0.25	mg/l		8260B	10/10/13	250
1,1,1,2-Tetrachloroethane	U	0.096	0.25	mg/l		8260B	10/10/13	250
1,1,2,2-Tetrachloroethane	U	0.15	0.25	mg/l		8260B	10/10/13	250
1,1,2-Trichlorotrifluoroethane	U	0.076	0.25	mg/l		8260B	10/10/13	250
Tetrachloroethene	U	0.093	0.25	mg/l		8260B	10/10/13	250
Toluene	U	0.20	1.3	mg/l		8260B	10/10/13	250
1,2,3-Trichlorobenzene	U	0.058	0.25	mg/l		8260B	10/10/13	250
1,2,4-Trichlorobenzene	U	0.054	0.25	mg/l		8260B	10/10/13	250
1,1,1-Trichloroethane	U	0.080	0.25	mg/l		8260B	10/10/13	250
1,1,2-Trichloroethane	U	0.096	0.25	mg/l		8260B	10/10/13	250
Trichloroethene	U	0.10	0.25	mg/l		8260B	10/10/13	250
Trichlorofluoromethane	U	0.30	1.3	mg/l		8260B	10/10/13	250
1,2,3-Trichloropropane	U	0.20	0.63	mg/l		8260B	10/10/13	250
1,2,4-Trimethylbenzene	U	0.093	0.25	mg/l		8260B	10/10/13	250
1,2,3-Trimethylbenzene	U	0.080	0.25	mg/l		8260B	10/10/13	250
1,3,5-Trimethylbenzene	U	0.097	0.25	mg/l		8260B	10/10/13	250
Vinyl chloride	3.4	0.065	0.25	mg/l		8260B	10/10/13	250
Xylenes, Total	U	0.26	0.75	mg/l		8260B	10/10/13	250
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	10/10/13	250
Dibromofluoromethane	97.8			% Rec.		8260B	10/10/13	250
4-Bromofluorobenzene	101.			% Rec.		8260B	10/10/13	250

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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REPORT OF ANALYSIS

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

October 17, 2013

Date Received : October 08, 2013
Description : RBIC - Leitchfield, KY

ESC Sample # : L661920-02

Sample ID : MW-8

Site ID :

Project # : 6251-12-1002

Collected By : Jacob A. Morris
Collection Date : 10/07/13 15:05

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TOC (Total Organic Carbon)	980	3.9	20.	mg/l		9060A	10/14/13	20
Volatile Organics								
Acetone	0.55	0.50	2.5	mg/l	J	8260B	10/10/13	50
Acrolein	U	0.44	2.5	mg/l		8260B	10/10/13	50
Acrylonitrile	U	0.094	0.50	mg/l		8260B	10/10/13	50
Benzene	U	0.016	0.050	mg/l		8260B	10/10/13	50
Bromobenzene	U	0.018	0.050	mg/l		8260B	10/10/13	50
Bromodichloromethane	U	0.019	0.050	mg/l		8260B	10/10/13	50
Bromoform	U	0.023	0.050	mg/l		8260B	10/10/13	50
Bromomethane	U	0.043	0.25	mg/l		8260B	10/10/13	50
n-Butylbenzene	U	0.018	0.050	mg/l		8260B	10/10/13	50
sec-Butylbenzene	U	0.018	0.050	mg/l		8260B	10/10/13	50
tert-Butylbenzene	U	0.020	0.050	mg/l		8260B	10/10/13	50
Carbon tetrachloride	U	0.019	0.050	mg/l		8260B	10/10/13	50
Chlorobenzene	U	0.017	0.050	mg/l		8260B	10/10/13	50
Chlorodibromomethane	U	0.016	0.050	mg/l		8260B	10/10/13	50
Chloroethane	U	0.023	0.25	mg/l		8260B	10/10/13	50
2-Chloroethyl vinyl ether	U	0.15	2.5	mg/l		8260B	10/10/13	50
Chloroform	U	0.016	0.25	mg/l		8260B	10/10/13	50
Chloromethane	U	0.014	0.13	mg/l		8260B	10/10/13	50
2-Chlorotoluene	U	0.019	0.050	mg/l		8260B	10/10/13	50
4-Chlorotoluene	U	0.018	0.050	mg/l		8260B	10/10/13	50
1,2-Dibromo-3-Chloropropane	U	0.066	0.25	mg/l		8260B	10/10/13	50
1,2-Dibromoethane	U	0.019	0.050	mg/l		8260B	10/10/13	50
Dibromomethane	U	0.017	0.050	mg/l		8260B	10/10/13	50
1,2-Dichlorobenzene	U	0.017	0.050	mg/l		8260B	10/10/13	50
1,3-Dichlorobenzene	U	0.011	0.050	mg/l		8260B	10/10/13	50
1,4-Dichlorobenzene	U	0.014	0.050	mg/l		8260B	10/10/13	50
Dichlorodifluoromethane	U	0.028	0.25	mg/l		8260B	10/10/13	50
1,1-Dichloroethane	U	0.013	0.050	mg/l		8260B	10/10/13	50
1,2-Dichloroethane	U	0.018	0.050	mg/l		8260B	10/10/13	50
1,1-Dichloroethene	U	0.020	0.050	mg/l		8260B	10/10/13	50
cis-1,2-Dichloroethene	1.3	0.013	0.050	mg/l		8260B	10/10/13	50
trans-1,2-Dichloroethene	U	0.020	0.050	mg/l	J4	8260B	10/10/13	50
1,2-Dichloropropane	U	0.015	0.050	mg/l		8260B	10/10/13	50
1,1-Dichloropropene	U	0.018	0.050	mg/l		8260B	10/10/13	50
1,3-Dichloropropane	U	0.018	0.050	mg/l		8260B	10/10/13	50
cis-1,3-Dichloropropene	U	0.021	0.050	mg/l		8260B	10/10/13	50
trans-1,3-Dichloropropene	U	0.021	0.050	mg/l		8260B	10/10/13	50
2,2-Dichloropropane	U	0.016	0.050	mg/l		8260B	10/10/13	50
Di-isopropyl ether	U	0.016	0.050	mg/l		8260B	10/10/13	50
Ethylbenzene	U	0.019	0.050	mg/l		8260B	10/10/13	50

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

October 17, 2013

ESC Sample # : L661920-02

Date Received : October 08, 2013
Description : RBIC - Leitchfield, KY

Site ID :

Sample ID : MW-8

Project # : 6251-12-1002

Collected By :
Collection Date : 10/07/13 15:05

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Hexachloro-1,3-butadiene	U	0.013	0.050	mg/l		8260B	10/10/13	50
Isopropylbenzene	U	0.016	0.050	mg/l		8260B	10/10/13	50
p-Isopropyltoluene	U	0.018	0.050	mg/l		8260B	10/10/13	50
2-Butanone (MEK)	0.84	0.20	0.50	mg/l		8260B	10/10/13	50
Methylene Chloride	U	0.050	0.25	mg/l		8260B	10/10/13	50
4-Methyl-2-pentanone (MIBK)	U	0.11	0.50	mg/l		8260B	10/10/13	50
Methyl tert-butyl ether	U	0.018	0.050	mg/l		8260B	10/10/13	50
Naphthalene	U	0.050	0.25	mg/l		8260B	10/10/13	50
n-Propylbenzene	U	0.017	0.050	mg/l		8260B	10/10/13	50
Styrene	U	0.015	0.050	mg/l		8260B	10/10/13	50
1,1,1,2-Tetrachloroethane	U	0.019	0.050	mg/l		8260B	10/10/13	50
1,1,2,2-Tetrachloroethane	U	0.029	0.050	mg/l		8260B	10/10/13	50
1,1,2-Trichlorotrifluoroethane	U	0.015	0.050	mg/l		8260B	10/10/13	50
Tetrachloroethene	U	0.019	0.050	mg/l		8260B	10/10/13	50
Toluene	U	0.039	0.25	mg/l		8260B	10/10/13	50
1,2,3-Trichlorobenzene	U	0.012	0.050	mg/l		8260B	10/10/13	50
1,2,4-Trichlorobenzene	U	0.011	0.050	mg/l		8260B	10/10/13	50
1,1,1-Trichloroethane	U	0.016	0.050	mg/l		8260B	10/10/13	50
1,1,2-Trichloroethane	U	0.019	0.050	mg/l		8260B	10/10/13	50
Trichloroethene	0.047	0.020	0.050	mg/l	J	8260B	10/10/13	50
Trichlorofluoromethane	U	0.060	0.25	mg/l		8260B	10/10/13	50
1,2,3-Trichloropropane	U	0.040	0.13	mg/l		8260B	10/10/13	50
1,2,4-Trimethylbenzene	U	0.019	0.050	mg/l		8260B	10/10/13	50
1,2,3-Trimethylbenzene	U	0.016	0.050	mg/l		8260B	10/10/13	50
1,3,5-Trimethylbenzene	U	0.019	0.050	mg/l		8260B	10/10/13	50
Vinyl chloride	0.12	0.013	0.050	mg/l		8260B	10/10/13	50
Xylenes, Total	U	0.053	0.15	mg/l		8260B	10/10/13	50
Surrogate Recovery								
Toluene-d8	106.			% Rec.		8260B	10/10/13	50
Dibromofluoromethane	99.3			% Rec.		8260B	10/10/13	50
4-Bromofluorobenzene	104.			% Rec.		8260B	10/10/13	50

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
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Note:
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REPORT OF ANALYSIS

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

October 17, 2013

Date Received : October 08, 2013
Description : RBIC - Leitchfield, KY

ESC Sample # : L661920-03

Sample ID : MW-13

Site ID :

Collected By : Jacob A. Morris
Collection Date : 10/07/13 16:15

Project # : 6251-12-1002

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TOC (Total Organic Carbon)	480	1.9	10.	mg/l		9060A	10/14/13	10
Volatile Organics								
Acetone	0.20	0.10	0.50	mg/l	J	8260B	10/10/13	10
Acrolein	U	0.089	0.50	mg/l		8260B	10/10/13	10
Acrylonitrile	U	0.019	0.10	mg/l		8260B	10/10/13	10
Benzene	U	0.0033	0.010	mg/l		8260B	10/10/13	10
Bromobenzene	U	0.0035	0.010	mg/l		8260B	10/10/13	10
Bromodichloromethane	U	0.0038	0.010	mg/l		8260B	10/10/13	10
Bromoform	U	0.0047	0.010	mg/l		8260B	10/10/13	10
Bromomethane	U	0.0087	0.050	mg/l		8260B	10/10/13	10
n-Butylbenzene	U	0.0036	0.010	mg/l		8260B	10/10/13	10
sec-Butylbenzene	U	0.0036	0.010	mg/l		8260B	10/10/13	10
tert-Butylbenzene	U	0.0040	0.010	mg/l		8260B	10/10/13	10
Carbon tetrachloride	U	0.0038	0.010	mg/l		8260B	10/10/13	10
Chlorobenzene	U	0.0035	0.010	mg/l		8260B	10/10/13	10
Chlorodibromomethane	U	0.0033	0.010	mg/l		8260B	10/10/13	10
Chloroethane	U	0.0045	0.050	mg/l		8260B	10/10/13	10
2-Chloroethyl vinyl ether	U	0.030	0.50	mg/l		8260B	10/10/13	10
Chloroform	U	0.0032	0.050	mg/l		8260B	10/10/13	10
Chloromethane	U	0.0028	0.025	mg/l		8260B	10/10/13	10
2-Chlorotoluene	U	0.0038	0.010	mg/l		8260B	10/10/13	10
4-Chlorotoluene	U	0.0035	0.010	mg/l		8260B	10/10/13	10
1,2-Dibromo-3-Chloropropane	U	0.013	0.050	mg/l		8260B	10/10/13	10
1,2-Dibromoethane	U	0.0038	0.010	mg/l		8260B	10/10/13	10
Dibromomethane	U	0.0035	0.010	mg/l		8260B	10/10/13	10
1,2-Dichlorobenzene	U	0.0035	0.010	mg/l		8260B	10/10/13	10
1,3-Dichlorobenzene	U	0.0022	0.010	mg/l		8260B	10/10/13	10
1,4-Dichlorobenzene	U	0.0027	0.010	mg/l		8260B	10/10/13	10
Dichlorodifluoromethane	U	0.0055	0.050	mg/l		8260B	10/10/13	10
1,1-Dichloroethane	U	0.0026	0.010	mg/l		8260B	10/10/13	10
1,2-Dichloroethane	U	0.0036	0.010	mg/l		8260B	10/10/13	10
1,1-Dichloroethene	U	0.0040	0.010	mg/l		8260B	10/10/13	10
cis-1,2-Dichloroethene	0.19	0.0026	0.010	mg/l		8260B	10/10/13	10
trans-1,2-Dichloroethene	U	0.0040	0.010	mg/l	J4	8260B	10/10/13	10
1,2-Dichloropropane	U	0.0031	0.010	mg/l		8260B	10/10/13	10
1,1-Dichloropropene	U	0.0035	0.010	mg/l		8260B	10/10/13	10
1,3-Dichloropropane	U	0.0037	0.010	mg/l		8260B	10/10/13	10
cis-1,3-Dichloropropene	U	0.0042	0.010	mg/l		8260B	10/10/13	10
trans-1,3-Dichloropropene	U	0.0042	0.010	mg/l		8260B	10/10/13	10
2,2-Dichloropropane	U	0.0032	0.010	mg/l		8260B	10/10/13	10
Di-isopropyl ether	U	0.0032	0.010	mg/l		8260B	10/10/13	10
Ethylbenzene	U	0.0038	0.010	mg/l		8260B	10/10/13	10

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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REPORT OF ANALYSIS

October 17, 2013

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

ESC Sample # : L661920-03

Date Received : October 08, 2013
Description : RBIC - Leitchfield, KY

Site ID :

Sample ID : MW-13

Project # : 6251-12-1002

Collected By : Jacob A. Morris
Collection Date : 10/07/13 16:15

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Hexachloro-1,3-butadiene	U	0.0026	0.010	mg/l		8260B	10/10/13	10
Isopropylbenzene	U	0.0033	0.010	mg/l		8260B	10/10/13	10
p-Isopropyltoluene	U	0.0035	0.010	mg/l		8260B	10/10/13	10
2-Butanone (MEK)	U	0.039	0.10	mg/l		8260B	10/10/13	10
Methylene Chloride	U	0.010	0.050	mg/l		8260B	10/10/13	10
4-Methyl-2-pentanone (MIBK)	U	0.021	0.10	mg/l		8260B	10/10/13	10
Methyl tert-butyl ether	U	0.0037	0.010	mg/l		8260B	10/10/13	10
Naphthalene	U	0.010	0.050	mg/l		8260B	10/10/13	10
n-Propylbenzene	U	0.0035	0.010	mg/l		8260B	10/10/13	10
Styrene	U	0.0031	0.010	mg/l		8260B	10/10/13	10
1,1,1,2-Tetrachloroethane	U	0.0038	0.010	mg/l		8260B	10/10/13	10
1,1,2,2-Tetrachloroethane	U	0.0058	0.010	mg/l		8260B	10/10/13	10
1,1,2-Trichlorotrifluoroethane	U	0.0030	0.010	mg/l		8260B	10/10/13	10
Tetrachloroethene	U	0.0037	0.010	mg/l		8260B	10/10/13	10
Toluene	U	0.0078	0.050	mg/l		8260B	10/10/13	10
1,2,3-Trichlorobenzene	U	0.0023	0.010	mg/l		8260B	10/10/13	10
1,2,4-Trichlorobenzene	U	0.0021	0.010	mg/l		8260B	10/10/13	10
1,1,1-Trichloroethane	U	0.0032	0.010	mg/l		8260B	10/10/13	10
1,1,2-Trichloroethane	U	0.0038	0.010	mg/l		8260B	10/10/13	10
Trichloroethene	0.0096	0.0040	0.010	mg/l	J	8260B	10/10/13	10
Trichlorofluoromethane	U	0.012	0.050	mg/l		8260B	10/10/13	10
1,2,3-Trichloropropane	U	0.0081	0.025	mg/l		8260B	10/10/13	10
1,2,4-Trimethylbenzene	U	0.0037	0.010	mg/l		8260B	10/10/13	10
1,2,3-Trimethylbenzene	U	0.0032	0.010	mg/l		8260B	10/10/13	10
1,3,5-Trimethylbenzene	U	0.0039	0.010	mg/l		8260B	10/10/13	10
Vinyl chloride	0.018	0.0026	0.010	mg/l		8260B	10/10/13	10
Xylenes, Total	U	0.011	0.030	mg/l		8260B	10/10/13	10
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	10/10/13	10
Dibromofluoromethane	97.6			% Rec.		8260B	10/10/13	10
4-Bromofluorobenzene	104.			% Rec.		8260B	10/10/13	10

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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REPORT OF ANALYSIS

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

October 17, 2013

Date Received : October 08, 2013
Description : RBIC - Leitchfield, KY

ESC Sample # : L661920-04

Sample ID : MW-21

Site ID :

Collected By :
Collection Date : 10/07/13 13:00

Project # : 6251-12-1002

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TOC (Total Organic Carbon)	74.	1.9	10.	mg/l		9060A	10/14/13	10
Volatile Organics								
Acetone	0.081	0.010	0.050	mg/l		8260B	10/10/13	1
Acrolein	U	0.0089	0.050	mg/l		8260B	10/10/13	1
Acrylonitrile	U	0.0019	0.010	mg/l		8260B	10/10/13	1
Benzene	0.00064	0.00033	0.0010	mg/l	J	8260B	10/10/13	1
Bromobenzene	U	0.00035	0.0010	mg/l		8260B	10/10/13	1
Bromodichloromethane	U	0.00038	0.0010	mg/l		8260B	10/10/13	1
Bromoform	U	0.00047	0.0010	mg/l		8260B	10/10/13	1
Bromomethane	U	0.00087	0.0050	mg/l		8260B	10/10/13	1
n-Butylbenzene	U	0.00036	0.0010	mg/l		8260B	10/10/13	1
sec-Butylbenzene	U	0.00036	0.0010	mg/l		8260B	10/10/13	1
tert-Butylbenzene	U	0.00040	0.0010	mg/l		8260B	10/10/13	1
Carbon tetrachloride	U	0.00038	0.0010	mg/l		8260B	10/10/13	1
Chlorobenzene	U	0.00035	0.0010	mg/l		8260B	10/10/13	1
Chlorodibromomethane	U	0.00033	0.0010	mg/l		8260B	10/10/13	1
Chloroethane	0.00071	0.00045	0.0050	mg/l	J	8260B	10/10/13	1
2-Chloroethyl vinyl ether	U	0.0030	0.050	mg/l		8260B	10/10/13	1
Chloroform	U	0.00032	0.0050	mg/l		8260B	10/10/13	1
Chloromethane	U	0.00028	0.0025	mg/l		8260B	10/10/13	1
2-Chlorotoluene	U	0.00038	0.0010	mg/l		8260B	10/10/13	1
4-Chlorotoluene	U	0.00035	0.0010	mg/l		8260B	10/10/13	1
1,2-Dibromo-3-Chloropropane	U	0.0013	0.0050	mg/l		8260B	10/10/13	1
1,2-Dibromoethane	U	0.00038	0.0010	mg/l		8260B	10/10/13	1
Dibromomethane	U	0.00035	0.0010	mg/l		8260B	10/10/13	1
1,2-Dichlorobenzene	U	0.00035	0.0010	mg/l		8260B	10/10/13	1
1,3-Dichlorobenzene	U	0.00022	0.0010	mg/l		8260B	10/10/13	1
1,4-Dichlorobenzene	U	0.00027	0.0010	mg/l		8260B	10/10/13	1
Dichlorodifluoromethane	U	0.00055	0.0050	mg/l		8260B	10/10/13	1
1,1-Dichloroethane	0.00088	0.00026	0.0010	mg/l	J	8260B	10/10/13	1
1,2-Dichloroethane	U	0.00036	0.0010	mg/l		8260B	10/10/13	1
1,1-Dichloroethene	0.010	0.00040	0.0010	mg/l		8260B	10/10/13	1
cis-1,2-Dichloroethene	0.56	0.0026	0.010	mg/l		8260B	10/12/13	10
trans-1,2-Dichloroethene	0.0048	0.00040	0.0010	mg/l	J4	8260B	10/10/13	1
1,2-Dichloropropane	U	0.00031	0.0010	mg/l		8260B	10/10/13	1
1,1-Dichloropropene	U	0.00035	0.0010	mg/l		8260B	10/10/13	1
1,3-Dichloropropane	U	0.00037	0.0010	mg/l		8260B	10/10/13	1
cis-1,3-Dichloropropene	U	0.00042	0.0010	mg/l		8260B	10/10/13	1
trans-1,3-Dichloropropene	U	0.00042	0.0010	mg/l		8260B	10/10/13	1
2,2-Dichloropropane	U	0.00032	0.0010	mg/l		8260B	10/10/13	1
Di-isopropyl ether	U	0.00032	0.0010	mg/l		8260B	10/10/13	1
Ethylbenzene	U	0.00038	0.0010	mg/l		8260B	10/10/13	1

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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REPORT OF ANALYSIS

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

October 17, 2013

ESC Sample # : L661920-04

Site ID :

Project # : 6251-12-1002

Date Received : October 08, 2013
Description : RBIC - Leitchfield, KY

Sample ID : MW-21

Collected By : Jacob A. Morris
Collection Date : 10/07/13 13:00

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Hexachloro-1,3-butadiene	U	0.00026	0.0010	mg/l		8260B	10/10/13	1
Isopropylbenzene	U	0.00033	0.0010	mg/l		8260B	10/10/13	1
p-Isopropyltoluene	U	0.00035	0.0010	mg/l		8260B	10/10/13	1
2-Butanone (MEK)	0.030	0.0039	0.010	mg/l		8260B	10/10/13	1
Methylene Chloride	U	0.0010	0.0050	mg/l		8260B	10/10/13	1
4-Methyl-2-pentanone (MIBK)	U	0.0021	0.010	mg/l		8260B	10/10/13	1
Methyl tert-butyl ether	U	0.00037	0.0010	mg/l		8260B	10/10/13	1
Naphthalene	U	0.0010	0.0050	mg/l		8260B	10/10/13	1
n-Propylbenzene	U	0.00035	0.0010	mg/l		8260B	10/10/13	1
Styrene	U	0.00031	0.0010	mg/l		8260B	10/10/13	1
1,1,1,2-Tetrachloroethane	U	0.00038	0.0010	mg/l		8260B	10/10/13	1
1,1,2,2-Tetrachloroethane	U	0.00058	0.0010	mg/l		8260B	10/10/13	1
1,1,2-Trichlorotrifluoroethane	U	0.00030	0.0010	mg/l		8260B	10/10/13	1
Tetrachloroethene	U	0.00037	0.0010	mg/l		8260B	10/10/13	1
Toluene	U	0.00078	0.0050	mg/l		8260B	10/10/13	1
1,2,3-Trichlorobenzene	U	0.00023	0.0010	mg/l		8260B	10/10/13	1
1,2,4-Trichlorobenzene	U	0.00021	0.0010	mg/l		8260B	10/10/13	1
1,1,1-Trichloroethane	U	0.00032	0.0010	mg/l		8260B	10/10/13	1
1,1,2-Trichloroethane	U	0.00038	0.0010	mg/l		8260B	10/10/13	1
Trichloroethene	0.0035	0.00040	0.0010	mg/l		8260B	10/10/13	1
Trichlorofluoromethane	U	0.0012	0.0050	mg/l		8260B	10/10/13	1
1,2,3-Trichloropropane	U	0.00081	0.0025	mg/l		8260B	10/10/13	1
1,2,4-Trimethylbenzene	U	0.00037	0.0010	mg/l		8260B	10/10/13	1
1,2,3-Trimethylbenzene	U	0.00032	0.0010	mg/l		8260B	10/10/13	1
1,3,5-Trimethylbenzene	U	0.00039	0.0010	mg/l		8260B	10/10/13	1
Vinyl chloride	0.0059	0.00026	0.0010	mg/l		8260B	10/10/13	1
Xylenes, Total	U	0.0011	0.0030	mg/l		8260B	10/10/13	1
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	10/10/13	1
Dibromofluoromethane	99.3			% Rec.		8260B	10/10/13	1
4-Bromofluorobenzene	106.			% Rec.		8260B	10/10/13	1

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

October 17, 2013

Date Received : October 08, 2013
Description : RETC - Leitchfield, KY

ESC Sample # : L661920-05

Site ID :

Sample ID : MW-22

Project # : 6251-12-1002

Collected By : Jacob A. Morris
Collection Date : 10/07/13 12:35

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TOC (Total Organic Carbon)	680	1.9	10.	mg/l		9060A	10/14/13	10
Volatile Organics								
Acetone	U	0.25	1.3	mg/l		8260B	10/10/13	25
Acrolein	U	0.22	1.3	mg/l		8260B	10/10/13	25
Acrylonitrile	U	0.047	0.25	mg/l		8260B	10/10/13	25
Benzene	U	0.0083	0.025	mg/l		8260B	10/10/13	25
Bromobenzene	U	0.0088	0.025	mg/l		8260B	10/10/13	25
Bromodichloromethane	U	0.0095	0.025	mg/l		8260B	10/10/13	25
Bromoform	U	0.012	0.025	mg/l		8260B	10/10/13	25
Bromomethane	U	0.022	0.13	mg/l		8260B	10/10/13	25
n-Butylbenzene	U	0.0090	0.025	mg/l		8260B	10/10/13	25
sec-Butylbenzene	U	0.0091	0.025	mg/l		8260B	10/10/13	25
tert-Butylbenzene	U	0.010	0.025	mg/l		8260B	10/10/13	25
Carbon tetrachloride	U	0.0095	0.025	mg/l		8260B	10/10/13	25
Chlorobenzene	U	0.0087	0.025	mg/l		8260B	10/10/13	25
Chlorodibromomethane	U	0.0082	0.025	mg/l		8260B	10/10/13	25
Chloroethane	0.024	0.011	0.13	mg/l	J	8260B	10/10/13	25
2-Chloroethyl vinyl ether	U	0.075	1.3	mg/l		8260B	10/10/13	25
Chloroform	U	0.0081	0.13	mg/l		8260B	10/10/13	25
Chloromethane	U	0.0069	0.063	mg/l		8260B	10/10/13	25
2-Chlorotoluene	U	0.0094	0.025	mg/l		8260B	10/10/13	25
4-Chlorotoluene	U	0.0088	0.025	mg/l		8260B	10/10/13	25
1,2-Dibromo-3-Chloropropane	U	0.033	0.13	mg/l		8260B	10/10/13	25
1,2-Dibromoethane	U	0.0095	0.025	mg/l		8260B	10/10/13	25
Dibromomethane	U	0.0086	0.025	mg/l		8260B	10/10/13	25
1,2-Dichlorobenzene	U	0.0087	0.025	mg/l		8260B	10/10/13	25
1,3-Dichlorobenzene	U	0.0055	0.025	mg/l		8260B	10/10/13	25
1,4-Dichlorobenzene	U	0.0068	0.025	mg/l		8260B	10/10/13	25
Dichlorodifluoromethane	U	0.014	0.13	mg/l		8260B	10/10/13	25
1,1-Dichloroethane	0.0073	0.0065	0.025	mg/l	J	8260B	10/10/13	25
1,2-Dichloroethane	U	0.0090	0.025	mg/l		8260B	10/10/13	25
1,1-Dichloroethene	0.080	0.010	0.025	mg/l		8260B	10/10/13	25
cis-1,2-Dichloroethene	4.6	0.0065	0.025	mg/l		8260B	10/10/13	25
trans-1,2-Dichloroethene	0.012	0.0099	0.025	mg/l	JJ4	8260B	10/10/13	25
1,2-Dichloropropane	U	0.0076	0.025	mg/l		8260B	10/10/13	25
1,1-Dichloropropene	U	0.0088	0.025	mg/l		8260B	10/10/13	25
1,3-Dichloropropane	U	0.0092	0.025	mg/l		8260B	10/10/13	25
cis-1,3-Dichloropropene	U	0.010	0.025	mg/l		8260B	10/10/13	25
trans-1,3-Dichloropropene	U	0.010	0.025	mg/l		8260B	10/10/13	25
2,2-Dichloropropane	U	0.0080	0.025	mg/l		8260B	10/10/13	25
Di-isopropyl ether	U	0.0080	0.025	mg/l		8260B	10/10/13	25
Ethylbenzene	U	0.0096	0.025	mg/l		8260B	10/10/13	25

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

October 17, 2013

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

ESC Sample # : L661920-05

Date Received : October 08, 2013
Description : RBIC - Leitchfield, KY

Site ID :

Sample ID : MW-22

Project # : 6251-12-1002

Collected By : Jacob A. Morris
Collection Date : 10/07/13 12:35

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Hexachloro-1,3-butadiene	U	0.0064	0.025	mg/l		8260B	10/10/13	25
Isopropylbenzene	U	0.0082	0.025	mg/l		8260B	10/10/13	25
p-Isopropyltoluene	U	0.0088	0.025	mg/l		8260B	10/10/13	25
2-Butanone (MEK)	0.70	0.098	0.25	mg/l		8260B	10/10/13	25
Methylene Chloride	U	0.025	0.13	mg/l		8260B	10/10/13	25
4-Methyl-2-pentanone (MIBK)	U	0.054	0.25	mg/l		8260B	10/10/13	25
Methyl tert-butyl ether	U	0.0092	0.025	mg/l		8260B	10/10/13	25
Naphthalene	U	0.025	0.13	mg/l		8260B	10/10/13	25
n-Propylbenzene	U	0.0087	0.025	mg/l		8260B	10/10/13	25
Styrene	U	0.0077	0.025	mg/l		8260B	10/10/13	25
1,1,1,2-Tetrachloroethane	U	0.0096	0.025	mg/l		8260B	10/10/13	25
1,1,2,2-Tetrachloroethane	U	0.015	0.025	mg/l		8260B	10/10/13	25
1,1,2-Trichlorotrifluoroethane	U	0.0076	0.025	mg/l		8260B	10/10/13	25
Tetrachloroethene	U	0.0093	0.025	mg/l		8260B	10/10/13	25
Toluene	U	0.020	0.13	mg/l		8260B	10/10/13	25
1,2,3-Trichlorobenzene	U	0.0058	0.025	mg/l		8260B	10/10/13	25
1,2,4-Trichlorobenzene	U	0.0054	0.025	mg/l		8260B	10/10/13	25
1,1,1-Trichloroethane	U	0.0080	0.025	mg/l		8260B	10/10/13	25
1,1,2-Trichloroethane	U	0.0096	0.025	mg/l		8260B	10/10/13	25
Trichloroethene	0.032	0.010	0.025	mg/l		8260B	10/10/13	25
Trichlorofluoromethane	U	0.030	0.13	mg/l		8260B	10/10/13	25
1,2,3-Trichloropropane	U	0.020	0.063	mg/l		8260B	10/10/13	25
1,2,4-Trimethylbenzene	U	0.0093	0.025	mg/l		8260B	10/10/13	25
1,2,3-Trimethylbenzene	U	0.0080	0.025	mg/l		8260B	10/10/13	25
1,3,5-Trimethylbenzene	U	0.0097	0.025	mg/l		8260B	10/10/13	25
Vinyl chloride	0.11	0.0065	0.025	mg/l		8260B	10/10/13	25
Xylenes, Total	U	0.026	0.075	mg/l		8260B	10/10/13	25
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	10/10/13	25
Dibromofluoromethane	96.0			% Rec.		8260B	10/10/13	25
4-Bromofluorobenzene	102.			% Rec.		8260B	10/10/13	25

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = IRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = IRRP MQL
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REPORT OF ANALYSIS

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

October 17, 2013

Date Received : October 08, 2013
Description : RBIC - Leitchfield, KY

Sample ID : MW-23

Collected By : Jacob A. Morris
Collection Date : 10/07/13 14:10

ESC Sample # : L661920-06

Site ID :

Project # : 6251-12-1002

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TOC (Total Organic Carbon)	0.68	0.19	1.0	mg/l	JP1	9060A	10/17/13	1
Volatile Organics								
Acetone	U	0.050	0.25	mg/l		8260B	10/10/13	5
Acrolein	U	0.044	0.25	mg/l		8260B	10/10/13	5
Acrylonitrile	U	0.0094	0.050	mg/l		8260B	10/10/13	5
Benzene	U	0.0016	0.0050	mg/l		8260B	10/10/13	5
Bromobenzene	U	0.0018	0.0050	mg/l		8260B	10/10/13	5
Bromodichloromethane	U	0.0019	0.0050	mg/l		8260B	10/10/13	5
Bromoform	U	0.0023	0.0050	mg/l		8260B	10/10/13	5
Bromomethane	U	0.0043	0.025	mg/l		8260B	10/10/13	5
n-Butylbenzene	U	0.0018	0.0050	mg/l		8260B	10/10/13	5
sec-Butylbenzene	U	0.0018	0.0050	mg/l		8260B	10/10/13	5
tert-Butylbenzene	U	0.0020	0.0050	mg/l		8260B	10/10/13	5
Carbon tetrachloride	U	0.0019	0.0050	mg/l		8260B	10/10/13	5
Chlorobenzene	U	0.0017	0.0050	mg/l		8260B	10/10/13	5
Chlorodibromomethane	U	0.0016	0.0050	mg/l		8260B	10/10/13	5
Chloroethane	U	0.0023	0.025	mg/l		8260B	10/10/13	5
2-Chloroethyl vinyl ether	U	0.015	0.25	mg/l		8260B	10/10/13	5
Chloroform	U	0.0016	0.025	mg/l		8260B	10/10/13	5
Chloromethane	U	0.0014	0.013	mg/l		8260B	10/10/13	5
2-Chlorotoluene	U	0.0019	0.0050	mg/l		8260B	10/10/13	5
4-Chlorotoluene	U	0.0018	0.0050	mg/l		8260B	10/10/13	5
1,2-Dibromo-3-Chloropropane	U	0.0066	0.025	mg/l		8260B	10/10/13	5
1,2-Dibromoethane	U	0.0019	0.0050	mg/l		8260B	10/10/13	5
Dibromomethane	U	0.0017	0.0050	mg/l		8260B	10/10/13	5
1,2-Dichlorobenzene	U	0.0017	0.0050	mg/l		8260B	10/10/13	5
1,3-Dichlorobenzene	U	0.0011	0.0050	mg/l		8260B	10/10/13	5
1,4-Dichlorobenzene	U	0.0014	0.0050	mg/l		8260B	10/10/13	5
Dichlorodifluoromethane	U	0.0028	0.025	mg/l		8260B	10/10/13	5
1,1-Dichloroethane	U	0.0013	0.0050	mg/l		8260B	10/10/13	5
1,2-Dichloroethane	U	0.0018	0.0050	mg/l		8260B	10/10/13	5
1,1-Dichloroethene	0.0029	0.0020	0.0050	mg/l	J	8260B	10/10/13	5
cis-1,2-Dichloroethene	0.33	0.0013	0.0050	mg/l		8260B	10/10/13	5
trans-1,2-Dichloroethene	0.0051	0.0020	0.0050	mg/l	J4	8260B	10/10/13	5
1,2-Dichloropropane	U	0.0015	0.0050	mg/l		8260B	10/10/13	5
1,1-Dichloropropene	U	0.0018	0.0050	mg/l		8260B	10/10/13	5
1,3-Dichloropropane	U	0.0018	0.0050	mg/l		8260B	10/10/13	5
cis-1,3-Dichloropropene	U	0.0021	0.0050	mg/l		8260B	10/10/13	5
trans-1,3-Dichloropropene	U	0.0021	0.0050	mg/l		8260B	10/10/13	5
2,2-Dichloropropane	U	0.0016	0.0050	mg/l		8260B	10/10/13	5
Di-isopropyl ether	U	0.0016	0.0050	mg/l		8260B	10/10/13	5
Ethylbenzene	U	0.0019	0.0050	mg/l		8260B	10/10/13	5

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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REPORT OF ANALYSIS

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

October 17, 2013

Date Received : October 08, 2013
Description : RBIC - Leitchfield, KY

Sample ID : MW-23

Collected By : Jacob A. Morris
Collection Date : 10/07/13 14:10

ESC Sample # : L661920-06

Site ID :

Project # : 6251-12-1002

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Hexachloro-1,3-butadiene	U	0.0013	0.0050	mg/l		8260B	10/10/13	5
Isopropylbenzene	U	0.0016	0.0050	mg/l		8260B	10/10/13	5
p-Isopropyltoluene	U	0.0018	0.0050	mg/l		8260B	10/10/13	5
2-Butanone (MEK)	U	0.020	0.050	mg/l		8260B	10/10/13	5
Methylene Chloride	U	0.0050	0.025	mg/l		8260B	10/10/13	5
4-Methyl-2-pentanone (MIBK)	U	0.011	0.050	mg/l		8260B	10/10/13	5
Methyl tert-butyl ether	U	0.0018	0.0050	mg/l		8260B	10/10/13	5
Naphthalene	U	0.0050	0.025	mg/l		8260B	10/10/13	5
n-Propylbenzene	U	0.0017	0.0050	mg/l		8260B	10/10/13	5
Styrene	U	0.0015	0.0050	mg/l		8260B	10/10/13	5
1,1,1,2-Tetrachloroethane	U	0.0019	0.0050	mg/l		8260B	10/10/13	5
1,1,2,2-Tetrachloroethane	U	0.0029	0.0050	mg/l		8260B	10/10/13	5
1,1,2-Trichlorotrifluoroethane	U	0.0015	0.0050	mg/l		8260B	10/10/13	5
Tetrachloroethene	U	0.0019	0.0050	mg/l		8260B	10/10/13	5
Toluene	U	0.0039	0.025	mg/l		8260B	10/10/13	5
1,2,3-Trichlorobenzene	U	0.0012	0.0050	mg/l		8260B	10/10/13	5
1,2,4-Trichlorobenzene	U	0.0011	0.0050	mg/l		8260B	10/10/13	5
1,1,1-Trichloroethane	U	0.0016	0.0050	mg/l		8260B	10/10/13	5
1,1,2-Trichloroethane	U	0.0019	0.0050	mg/l		8260B	10/10/13	5
Trichloroethene	0.010	0.0020	0.0050	mg/l		8260B	10/10/13	5
Trichlorofluoromethane	U	0.0060	0.025	mg/l		8260B	10/10/13	5
1,2,3-Trichloropropane	U	0.0040	0.013	mg/l		8260B	10/10/13	5
1,2,4-Trimethylbenzene	U	0.0019	0.0050	mg/l		8260B	10/10/13	5
1,2,3-Trimethylbenzene	U	0.0016	0.0050	mg/l		8260B	10/10/13	5
1,3,5-Trimethylbenzene	U	0.0019	0.0050	mg/l		8260B	10/10/13	5
Vinyl chloride	0.093	0.0013	0.0050	mg/l		8260B	10/10/13	5
Xylenes, Total	U	0.0053	0.015	mg/l		8260B	10/10/13	5
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	10/10/13	5
Dibromofluoromethane	99.8			% Rec.		8260B	10/10/13	5
4-Bromofluorobenzene	102.			% Rec.		8260B	10/10/13	5

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = IRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = IRRP MQL
Note:
The reported analytical results relate only to the sample submitted.

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REPORT OF ANALYSIS

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

October 17, 2013

Date Received : October 08, 2013
Description : RBIC - Leitchfield, KY

ESC Sample # : L661920-07

Sample ID : MW-17

Site ID :

Collected By : Jacob A. Morris
Collection Date : 10/07/13 17:50

Project # : 6251-12-1002

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TOC (Total Organic Carbon)	580	1.9	10.	mg/l		9060A	10/14/13	10
Volatile Organics								
Acetone	U	2.0	10.	mg/l		8260B	10/10/13	200
Acrolein	U	1.8	10.	mg/l		8260B	10/10/13	200
Acrylonitrile	U	0.37	2.0	mg/l		8260B	10/10/13	200
Benzene	U	0.066	0.20	mg/l		8260B	10/10/13	200
Bromobenzene	U	0.070	0.20	mg/l		8260B	10/10/13	200
Bromodichloromethane	U	0.076	0.20	mg/l		8260B	10/10/13	200
Bromoform	U	0.094	0.20	mg/l		8260B	10/10/13	200
Bromomethane	U	0.17	1.0	mg/l		8260B	10/10/13	200
n-Butylbenzene	U	0.072	0.20	mg/l		8260B	10/10/13	200
sec-Butylbenzene	U	0.073	0.20	mg/l		8260B	10/10/13	200
tert-Butylbenzene	U	0.080	0.20	mg/l		8260B	10/10/13	200
Carbon tetrachloride	U	0.076	0.20	mg/l		8260B	10/10/13	200
Chlorobenzene	U	0.070	0.20	mg/l		8260B	10/10/13	200
Chlorodibromomethane	U	0.065	0.20	mg/l		8260B	10/10/13	200
Chloroethane	U	0.091	1.0	mg/l		8260B	10/10/13	200
2-Chloroethyl vinyl ether	U	0.60	10.	mg/l		8260B	10/10/13	200
Chloroform	U	0.065	1.0	mg/l		8260B	10/10/13	200
Chloromethane	U	0.055	0.50	mg/l		8260B	10/10/13	200
2-Chlorotoluene	U	0.075	0.20	mg/l		8260B	10/10/13	200
4-Chlorotoluene	U	0.070	0.20	mg/l		8260B	10/10/13	200
1,2-Dibromo-3-Chloropropane	U	0.27	1.0	mg/l		8260B	10/10/13	200
1,2-Dibromoethane	U	0.076	0.20	mg/l		8260B	10/10/13	200
Dibromomethane	U	0.069	0.20	mg/l		8260B	10/10/13	200
1,2-Dichlorobenzene	U	0.070	0.20	mg/l		8260B	10/10/13	200
1,3-Dichlorobenzene	U	0.044	0.20	mg/l		8260B	10/10/13	200
1,4-Dichlorobenzene	U	0.055	0.20	mg/l		8260B	10/10/13	200
Dichlorodifluoromethane	U	0.11	1.0	mg/l		8260B	10/10/13	200
1,1-Dichloroethane	0.15	0.052	0.20	mg/l	J	8260B	10/10/13	200
1,2-Dichloroethane	U	0.072	0.20	mg/l		8260B	10/10/13	200
1,1-Dichloroethene	0.092	0.080	0.20	mg/l	J	8260B	10/10/13	200
cis-1,2-Dichloroethene	15.	0.052	0.20	mg/l		8260B	10/10/13	200
trans-1,2-Dichloroethene	U	0.079	0.20	mg/l	J4	8260B	10/10/13	200
1,2-Dichloropropane	U	0.061	0.20	mg/l		8260B	10/10/13	200
1,1-Dichloropropene	U	0.070	0.20	mg/l		8260B	10/10/13	200
1,3-Dichloropropane	U	0.073	0.20	mg/l		8260B	10/10/13	200
cis-1,3-Dichloropropene	U	0.084	0.20	mg/l		8260B	10/10/13	200
trans-1,3-Dichloropropene	U	0.084	0.20	mg/l		8260B	10/10/13	200
2,2-Dichloropropane	U	0.064	0.20	mg/l		8260B	10/10/13	200
Di-isopropyl ether	U	0.064	0.20	mg/l		8260B	10/10/13	200
Ethylbenzene	U	0.077	0.20	mg/l		8260B	10/10/13	200

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

October 17, 2013

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

ESC Sample # : L661920-07

Date Received : October 08, 2013
Description : RBIC - Leitchfield, KY

Site ID :

Sample ID : MW-17

Project # : 6251-12-1002

Collected By : Jacob A. Morris
Collection Date : 10/07/13 17:50

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Hexachloro-1,3-butadiene	U	0.051	0.20	mg/l		8260B	10/10/13	200
Isopropylbenzene	U	0.065	0.20	mg/l		8260B	10/10/13	200
p-Isopropyltoluene	U	0.070	0.20	mg/l		8260B	10/10/13	200
2-Butanone (MEK)	U	0.79	2.0	mg/l		8260B	10/10/13	200
Methylene Chloride	U	0.20	1.0	mg/l		8260B	10/10/13	200
4-Methyl-2-pentanone (MIBK)	U	0.43	2.0	mg/l		8260B	10/10/13	200
Methyl tert-butyl ether	U	0.073	0.20	mg/l		8260B	10/10/13	200
Naphthalene	U	0.20	1.0	mg/l		8260B	10/10/13	200
n-Propylbenzene	U	0.070	0.20	mg/l		8260B	10/10/13	200
Styrene	U	0.061	0.20	mg/l		8260B	10/10/13	200
1,1,1,2-Tetrachloroethane	U	0.077	0.20	mg/l		8260B	10/10/13	200
1,1,2,2-Tetrachloroethane	U	0.12	0.20	mg/l		8260B	10/10/13	200
1,1,2-Trichlorotrifluoroethane	U	0.061	0.20	mg/l		8260B	10/10/13	200
Tetrachloroethene	U	0.074	0.20	mg/l		8260B	10/10/13	200
Toluene	U	0.16	1.0	mg/l		8260B	10/10/13	200
1,2,3-Trichlorobenzene	U	0.046	0.20	mg/l		8260B	10/10/13	200
1,2,4-Trichlorobenzene	U	0.043	0.20	mg/l		8260B	10/10/13	200
1,1,1-Trichloroethane	U	0.064	0.20	mg/l		8260B	10/10/13	200
1,1,2-Trichloroethane	U	0.077	0.20	mg/l		8260B	10/10/13	200
Trichloroethene	0.099	0.080	0.20	mg/l	J	8260B	10/10/13	200
Trichlorofluoromethane	U	0.24	1.0	mg/l		8260B	10/10/13	200
1,2,3-Trichloropropane	U	0.16	0.50	mg/l		8260B	10/10/13	200
1,2,4-Trimethylbenzene	U	0.075	0.20	mg/l		8260B	10/10/13	200
1,2,3-Trimethylbenzene	U	0.064	0.20	mg/l		8260B	10/10/13	200
1,3,5-Trimethylbenzene	U	0.077	0.20	mg/l		8260B	10/10/13	200
Vinyl chloride	3.1	0.052	0.20	mg/l		8260B	10/10/13	200
Xylenes, Total	U	0.21	0.60	mg/l		8260B	10/10/13	200
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	10/10/13	200
Dibromofluoromethane	98.4			% Rec.		8260B	10/10/13	200
4-Bromofluorobenzene	100.			% Rec.		8260B	10/10/13	200

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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REPORT OF ANALYSIS

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

October 17, 2013

Date Received : October 08, 2013
Description : RBIC - Leitchfield, KY

ESC Sample # : L661920-08

Sample ID : SW-4

Site ID :

Collected By :
Collection Date : 10/07/13 11:00

Project # : 6251-12-1002

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TOC (Total Organic Carbon)	0.22	0.19	1.0	mg/l	J	9060A	10/17/13	1
Volatile Organics								
Acetone	U	0.020	0.10	mg/l		8260B	10/10/13	2
Acrolein	U	0.018	0.10	mg/l		8260B	10/10/13	2
Acrylonitrile	U	0.0037	0.020	mg/l		8260B	10/10/13	2
Benzene	U	0.00066	0.0020	mg/l		8260B	10/10/13	2
Bromobenzene	U	0.00070	0.0020	mg/l		8260B	10/10/13	2
Bromodichloromethane	U	0.00076	0.0020	mg/l		8260B	10/10/13	2
Bromoform	U	0.00094	0.0020	mg/l		8260B	10/10/13	2
Bromomethane	U	0.0017	0.010	mg/l		8260B	10/10/13	2
n-Butylbenzene	U	0.00072	0.0020	mg/l		8260B	10/10/13	2
sec-Butylbenzene	U	0.00073	0.0020	mg/l		8260B	10/10/13	2
tert-Butylbenzene	U	0.00080	0.0020	mg/l		8260B	10/10/13	2
Carbon tetrachloride	U	0.00076	0.0020	mg/l		8260B	10/10/13	2
Chlorobenzene	U	0.00070	0.0020	mg/l		8260B	10/10/13	2
Chlorodibromomethane	U	0.00065	0.0020	mg/l		8260B	10/10/13	2
Chloroethane	0.0062	0.00091	0.010	mg/l	J	8260B	10/10/13	2
2-Chloroethyl vinyl ether	U	0.0060	0.10	mg/l		8260B	10/10/13	2
Chloroform	U	0.00065	0.010	mg/l		8260B	10/10/13	2
Chloromethane	U	0.00055	0.0050	mg/l		8260B	10/10/13	2
2-Chlorotoluene	U	0.00075	0.0020	mg/l		8260B	10/10/13	2
4-Chlorotoluene	U	0.00070	0.0020	mg/l		8260B	10/10/13	2
1,2-Dibromo-3-Chloropropane	U	0.0027	0.010	mg/l		8260B	10/10/13	2
1,2-Dibromoethane	U	0.00076	0.0020	mg/l		8260B	10/10/13	2
Dibromomethane	U	0.00069	0.0020	mg/l		8260B	10/10/13	2
1,2-Dichlorobenzene	U	0.00070	0.0020	mg/l		8260B	10/10/13	2
1,3-Dichlorobenzene	U	0.00044	0.0020	mg/l		8260B	10/10/13	2
1,4-Dichlorobenzene	U	0.00055	0.0020	mg/l		8260B	10/10/13	2
Dichlorodifluoromethane	U	0.0011	0.010	mg/l		8260B	10/10/13	2
1,1-Dichloroethane	0.0032	0.00052	0.0020	mg/l		8260B	10/10/13	2
1,2-Dichloroethane	U	0.00072	0.0020	mg/l		8260B	10/10/13	2
1,1-Dichloroethene	0.013	0.00080	0.0020	mg/l		8260B	10/10/13	2
cis-1,2-Dichloroethene	2.7	0.0065	0.025	mg/l		8260B	10/12/13	25
trans-1,2-Dichloroethene	0.0054	0.00079	0.0020	mg/l	J4	8260B	10/10/13	2
1,2-Dichloropropane	U	0.00061	0.0020	mg/l		8260B	10/10/13	2
1,1-Dichloropropene	U	0.00070	0.0020	mg/l		8260B	10/10/13	2
1,3-Dichloropropane	U	0.00073	0.0020	mg/l		8260B	10/10/13	2
cis-1,3-Dichloropropene	U	0.00084	0.0020	mg/l		8260B	10/10/13	2
trans-1,3-Dichloropropene	U	0.00084	0.0020	mg/l		8260B	10/10/13	2
2,2-Dichloropropane	U	0.00064	0.0020	mg/l		8260B	10/10/13	2
Di-isopropyl ether	U	0.00064	0.0020	mg/l		8260B	10/10/13	2
Ethylbenzene	U	0.00077	0.0020	mg/l		8260B	10/10/13	2

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

October 17, 2013

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

ESC Sample # : L661920-08

Date Received : October 08, 2013
Description : RBIC - Leitchfield, KY

Site ID :

Sample ID : SW-4

Project # : 6251-12-1002

Collected By : Jacob A. Morris
Collection Date : 10/07/13 11:00

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Hexachloro-1,3-butadiene	U	0.00051	0.0020	mg/l		8260B	10/10/13	2
Isopropylbenzene	U	0.00065	0.0020	mg/l		8260B	10/10/13	2
p-Isopropyltoluene	U	0.00070	0.0020	mg/l		8260B	10/10/13	2
2-Butanone (MEK)	U	0.0079	0.020	mg/l		8260B	10/10/13	2
Methylene Chloride	U	0.0020	0.010	mg/l		8260B	10/10/13	2
4-Methyl-2-pentanone (MIBK)	U	0.0043	0.020	mg/l		8260B	10/10/13	2
Methyl tert-butyl ether	U	0.00073	0.0020	mg/l		8260B	10/10/13	2
Naphthalene	U	0.0020	0.010	mg/l		8260B	10/10/13	2
n-Propylbenzene	U	0.00070	0.0020	mg/l		8260B	10/10/13	2
Styrene	U	0.00061	0.0020	mg/l		8260B	10/10/13	2
1,1,1,2-Tetrachloroethane	U	0.00077	0.0020	mg/l		8260B	10/10/13	2
1,1,2,2-Tetrachloroethane	U	0.0012	0.0020	mg/l		8260B	10/10/13	2
1,1,2-Trichlorotrifluoroethane	U	0.00061	0.0020	mg/l		8260B	10/10/13	2
Tetrachloroethene	U	0.00074	0.0020	mg/l		8260B	10/10/13	2
Toluene	U	0.0016	0.010	mg/l		8260B	10/10/13	2
1,2,3-Trichlorobenzene	U	0.00046	0.0020	mg/l		8260B	10/10/13	2
1,2,4-Trichlorobenzene	U	0.00043	0.0020	mg/l		8260B	10/10/13	2
1,1,1-Trichloroethane	U	0.00064	0.0020	mg/l		8260B	10/10/13	2
1,1,2-Trichloroethane	U	0.00077	0.0020	mg/l		8260B	10/10/13	2
Trichloroethene	0.26	0.00080	0.0020	mg/l		8260B	10/10/13	2
Trichlorofluoromethane	U	0.0024	0.010	mg/l		8260B	10/10/13	2
1,2,3-Trichloropropane	U	0.0016	0.0050	mg/l		8260B	10/10/13	2
1,2,4-Trimethylbenzene	U	0.00075	0.0020	mg/l		8260B	10/10/13	2
1,2,3-Trimethylbenzene	U	0.00064	0.0020	mg/l		8260B	10/10/13	2
1,3,5-Trimethylbenzene	U	0.00077	0.0020	mg/l		8260B	10/10/13	2
Vinyl chloride	0.66	0.0065	0.025	mg/l		8260B	10/12/13	25
Xylenes, Total	U	0.0021	0.0060	mg/l		8260B	10/10/13	2
Surrogate Recovery								
Toluene-d8	96.4			% Rec.		8260B	10/10/13	2
Dibromofluoromethane	101.			% Rec.		8260B	10/10/13	2
4-Bromofluorobenzene	97.7			% Rec.		8260B	10/10/13	2

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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REPORT OF ANALYSIS

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

October 17, 2013

Date Received : October 08, 2013
Description : RBIC - Leitchfield, KY

ESC Sample # : L661920-09

Sample ID : TRIPBLANK

Site ID :

Collected By : Jacob A. Morris
Collection Date : 10/07/13 00:00

Project # : 6251-12-1002

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Volatile Organics								
Acetone	U	0.010	0.050	mg/l		8260B	10/10/13	1
Acrolein	U	0.0089	0.050	mg/l		8260B	10/10/13	1
Acrylonitrile	U	0.0019	0.010	mg/l		8260B	10/10/13	1
Benzene	U	0.00033	0.0010	mg/l		8260B	10/10/13	1
Bromobenzene	U	0.00035	0.0010	mg/l		8260B	10/10/13	1
Bromodichloromethane	U	0.00038	0.0010	mg/l		8260B	10/10/13	1
Bromoform	U	0.00047	0.0010	mg/l		8260B	10/10/13	1
Bromomethane	U	0.00087	0.0050	mg/l		8260B	10/10/13	1
n-Butylbenzene	U	0.00036	0.0010	mg/l		8260B	10/10/13	1
sec-Butylbenzene	U	0.00036	0.0010	mg/l		8260B	10/10/13	1
tert-Butylbenzene	U	0.00040	0.0010	mg/l		8260B	10/10/13	1
Carbon tetrachloride	U	0.00038	0.0010	mg/l		8260B	10/10/13	1
Chlorobenzene	U	0.00035	0.0010	mg/l		8260B	10/10/13	1
Chlorodibromomethane	U	0.00033	0.0010	mg/l		8260B	10/10/13	1
Chloroethane	U	0.00045	0.0050	mg/l		8260B	10/10/13	1
2-Chloroethyl vinyl ether	U	0.0030	0.050	mg/l		8260B	10/10/13	1
Chloroform	U	0.00032	0.0050	mg/l		8260B	10/10/13	1
Chloromethane	U	0.00028	0.0025	mg/l		8260B	10/10/13	1
2-Chlorotoluene	U	0.00038	0.0010	mg/l		8260B	10/10/13	1
4-Chlorotoluene	U	0.00035	0.0010	mg/l		8260B	10/10/13	1
1,2-Dibromo-3-Chloropropane	U	0.0013	0.0050	mg/l		8260B	10/10/13	1
1,2-Dibromoethane	U	0.00038	0.0010	mg/l		8260B	10/10/13	1
Dibromomethane	U	0.00035	0.0010	mg/l		8260B	10/10/13	1
1,2-Dichlorobenzene	U	0.00035	0.0010	mg/l		8260B	10/10/13	1
1,3-Dichlorobenzene	U	0.00022	0.0010	mg/l		8260B	10/10/13	1
1,4-Dichlorobenzene	U	0.00027	0.0010	mg/l		8260B	10/10/13	1
Dichlorodifluoromethane	U	0.00055	0.0050	mg/l		8260B	10/10/13	1
1,1-Dichloroethane	U	0.00026	0.0010	mg/l		8260B	10/10/13	1
1,2-Dichloroethane	U	0.00036	0.0010	mg/l		8260B	10/10/13	1
1,1-Dichloroethene	U	0.00040	0.0010	mg/l		8260B	10/10/13	1
cis-1,2-Dichloroethene	U	0.00026	0.0010	mg/l		8260B	10/10/13	1
trans-1,2-Dichloroethene	U	0.00040	0.0010	mg/l	J4	8260B	10/10/13	1
1,2-Dichloropropane	U	0.00031	0.0010	mg/l		8260B	10/10/13	1
1,1-Dichloropropene	U	0.00035	0.0010	mg/l		8260B	10/10/13	1
1,3-Dichloropropane	U	0.00037	0.0010	mg/l		8260B	10/10/13	1
cis-1,3-Dichloropropene	U	0.00042	0.0010	mg/l		8260B	10/10/13	1
trans-1,3-Dichloropropene	U	0.00042	0.0010	mg/l		8260B	10/10/13	1
2,2-Dichloropropane	U	0.00032	0.0010	mg/l		8260B	10/10/13	1
Di-isopropyl ether	U	0.00032	0.0010	mg/l		8260B	10/10/13	1
Ethylbenzene	U	0.00038	0.0010	mg/l		8260B	10/10/13	1
Hexachloro-1,3-butadiene	U	0.00026	0.0010	mg/l		8260B	10/10/13	1
Isopropylbenzene	U	0.00033	0.0010	mg/l		8260B	10/10/13	1

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
The reported analytical results relate only to the sample submitted.

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Reported: 10/17/13 16:29 Printed: 10/17/13 16:30

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Est. 1970

REPORT OF ANALYSIS

October 17, 2013

Ms. Sarah Donaldson
AMEC Env. & Infrastructure - Lexing
2456 Fortune Drive; Ste 100
Lexington, KY 40509

ESC Sample # : L661920-09

Date Received : October 08, 2013
Description : RBIC - Leitchfield, KY

Site ID :

Sample ID : TRIPBLANK

Project # : 6251-12-1002

Collected By : Jacob A. Morris
Collection Date : 10/07/13 00:00

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
p-Isopropyltoluene	U	0.00035	0.0010	mg/l		8260B	10/10/13	1
2-Butanone (MEK)	U	0.0039	0.010	mg/l		8260B	10/10/13	1
Methylene Chloride	U	0.0010	0.0050	mg/l		8260B	10/10/13	1
4-Methyl-2-pentanone (MIBK)	U	0.0021	0.010	mg/l		8260B	10/10/13	1
Methyl tert-butyl ether	U	0.00037	0.0010	mg/l		8260B	10/10/13	1
Naphthalene	U	0.0010	0.0050	mg/l		8260B	10/10/13	1
n-Propylbenzene	U	0.00035	0.0010	mg/l		8260B	10/10/13	1
Styrene	U	0.00031	0.0010	mg/l		8260B	10/10/13	1
1,1,1,2-Tetrachloroethane	U	0.00038	0.0010	mg/l		8260B	10/10/13	1
1,1,2,2-Tetrachloroethane	U	0.00058	0.0010	mg/l		8260B	10/10/13	1
1,1,2-Trichlorotrifluoroethane	U	0.00030	0.0010	mg/l		8260B	10/10/13	1
Tetrachloroethene	U	0.00037	0.0010	mg/l		8260B	10/10/13	1
Toluene	U	0.00078	0.0050	mg/l		8260B	10/10/13	1
1,2,3-Trichlorobenzene	U	0.00023	0.0010	mg/l		8260B	10/10/13	1
1,2,4-Trichlorobenzene	U	0.00021	0.0010	mg/l		8260B	10/10/13	1
1,1,1-Trichloroethane	U	0.00032	0.0010	mg/l		8260B	10/10/13	1
1,1,2-Trichloroethane	U	0.00038	0.0010	mg/l		8260B	10/10/13	1
Trichloroethene	U	0.00040	0.0010	mg/l		8260B	10/10/13	1
Trichlorofluoromethane	U	0.0012	0.0050	mg/l		8260B	10/10/13	1
1,2,3-Trichloropropane	U	0.00081	0.0025	mg/l		8260B	10/10/13	1
1,2,4-Trimethylbenzene	U	0.00037	0.0010	mg/l		8260B	10/10/13	1
1,2,3-Trimethylbenzene	U	0.00032	0.0010	mg/l		8260B	10/10/13	1
1,3,5-Trimethylbenzene	U	0.00039	0.0010	mg/l		8260B	10/10/13	1
Vinyl chloride	U	0.00026	0.0010	mg/l		8260B	10/10/13	1
Xylenes, Total	U	0.0011	0.0030	mg/l		8260B	10/10/13	1
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	10/10/13	1
Dibromofluoromethane	98.8			% Rec.		8260B	10/10/13	1
4-Bromofluorobenzene	100.			% Rec.		8260B	10/10/13	1

U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
The reported analytical results relate only to the sample submitted.

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Reported: 10/17/13 16:29 Printed: 10/17/13 16:30

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L661920-01	WG686066	SAMP	1,1-Dichloroethane	R2839127	J
	WG686066	SAMP	1,1-Dichloroethene	R2839127	J
	WG686066	SAMP	trans-1,2-Dichloroethene	R2839127	J4
L661920-02	WG686066	SAMP	Acetone	R2839127	J
	WG686066	SAMP	trans-1,2-Dichloroethene	R2839127	J4
	WG686066	SAMP	Trichloroethene	R2839127	J
L661920-03	WG686066	SAMP	Acetone	R2839127	J
	WG686066	SAMP	trans-1,2-Dichloroethene	R2839127	J4
	WG686066	SAMP	Trichloroethene	R2839127	J
L661920-04	WG686066	SAMP	Benzene	R2839127	J
	WG686066	SAMP	Chloroethane	R2839127	J
	WG686066	SAMP	1,1-Dichloroethane	R2839127	J
	WG686066	SAMP	trans-1,2-Dichloroethene	R2839127	J4
L661920-05	WG686066	SAMP	Chloroethane	R2839127	J
	WG686066	SAMP	1,1-Dichloroethane	R2839127	J
	WG686066	SAMP	trans-1,2-Dichloroethene	R2839127	JJ4
L661920-06	WG687052	SAMP	TOC (Total Organic Carbon)	R2841214	JP1
	WG686066	SAMP	1,1-Dichloroethene	R2839127	J
	WG686066	SAMP	trans-1,2-Dichloroethene	R2839127	J4
L661920-07	WG686066	SAMP	1,1-Dichloroethane	R2839127	J
	WG686066	SAMP	1,1-Dichloroethene	R2839127	J
	WG686066	SAMP	trans-1,2-Dichloroethene	R2839127	J4
	WG686066	SAMP	Trichloroethene	R2839127	J
L661920-08	WG687052	SAMP	TOC (Total Organic Carbon)	R2841214	J
	WG686066	SAMP	Chloroethane	R2839127	J
	WG686066	SAMP	trans-1,2-Dichloroethene	R2839127	J4
L661920-09	WG686066	SAMP	trans-1,2-Dichloroethene	R2839127	J4

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
J4	The associated batch QC was outside the established quality control range for accuracy.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
10/17/13 at 16:30:35

TSR Signing Reports: 044
R5 - Desired TAT

GW As by 6020 ICP/MS Alison's direct dial 859-566-3729 All soils need dry weight reporting.
MDL/RDL reporting

Sample: L661920-01 Account: MACTECLEX Received: 10/08/13 09:00 Due Date: 10/15/13 00:00 RPT Date: 10/17/13 16:29
Special Handling - Samples will need to be filtered with a syringe filter before analysis.
Sample: L661920-02 Account: MACTECLEX Received: 10/08/13 09:00 Due Date: 10/15/13 00:00 RPT Date: 10/17/13 16:29
Special Handling - Samples will need to be filtered with a syringe filter before analysis.
Sample: L661920-03 Account: MACTECLEX Received: 10/08/13 09:00 Due Date: 10/15/13 00:00 RPT Date: 10/17/13 16:29
Special Handling - Samples will need to be filtered with a syringe filter before analysis.
Sample: L661920-04 Account: MACTECLEX Received: 10/08/13 09:00 Due Date: 10/15/13 00:00 RPT Date: 10/17/13 16:29
Special Handling - Samples will need to be filtered with a syringe filter before analysis.
Sample: L661920-05 Account: MACTECLEX Received: 10/08/13 09:00 Due Date: 10/15/13 00:00 RPT Date: 10/17/13 16:29
Special Handling - Samples will need to be filtered with a syringe filter before analysis.
Sample: L661920-06 Account: MACTECLEX Received: 10/08/13 09:00 Due Date: 10/15/13 00:00 RPT Date: 10/17/13 16:29
Special Handling - Samples will need to be filtered with a syringe filter before analysis.
Sample: L661920-07 Account: MACTECLEX Received: 10/08/13 09:00 Due Date: 10/15/13 00:00 RPT Date: 10/17/13 16:29
Special Handling - Samples will need to be filtered with a syringe filter before analysis.
Sample: L661920-08 Account: MACTECLEX Received: 10/08/13 09:00 Due Date: 10/15/13 00:00 RPT Date: 10/17/13 16:29
Special Handling - Samples will need to be filtered with a syringe filter before analysis.
Sample: L661920-09 Account: MACTECLEX Received: 10/08/13 09:00 Due Date: 10/15/13 00:00 RPT Date: 10/17/13 16:29
Special Handling - Samples will need to be filtered with a syringe filter before analysis.

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AMEC Env. & Infrastructure - Lexington
Ms. Sarah Donaldson
2456 Fortune Drive; Ste 100

Lexington, KY 40509

Quality Assurance Report
Level II

L661920

October 17, 2013

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
1,1,1,2-Tetrachloroethane	< .001	mg/l			WG686066	10/10/13 13:38
1,1,1-Trichloroethane	< .001	mg/l			WG686066	10/10/13 13:38
1,1,2,2-Tetrachloroethane	< .001	mg/l			WG686066	10/10/13 13:38
1,1,2-Trichloroethane	< .001	mg/l			WG686066	10/10/13 13:38
1,1,2-Trichlorotrifluoroethane	< .001	mg/l			WG686066	10/10/13 13:38
1,1-Dichloroethane	< .001	mg/l			WG686066	10/10/13 13:38
1,1-Dichloroethene	< .001	mg/l			WG686066	10/10/13 13:38
1,1-Dichloropropene	< .001	mg/l			WG686066	10/10/13 13:38
1,2,3-Trichlorobenzene	< .001	mg/l			WG686066	10/10/13 13:38
1,2,3-Trichloropropane	< .001	mg/l			WG686066	10/10/13 13:38
1,2,3-Trimethylbenzene	< .001	mg/l			WG686066	10/10/13 13:38
1,2,4-Trichlorobenzene	< .001	mg/l			WG686066	10/10/13 13:38
1,2,4-Trimethylbenzene	< .001	mg/l			WG686066	10/10/13 13:38
1,2-Dibromo-3-Chloropropane	< .005	mg/l			WG686066	10/10/13 13:38
1,2-Dibromoethane	< .001	mg/l			WG686066	10/10/13 13:38
1,2-Dichlorobenzene	< .001	mg/l			WG686066	10/10/13 13:38
1,2-Dichloroethane	< .001	mg/l			WG686066	10/10/13 13:38
1,2-Dichloropropane	< .001	mg/l			WG686066	10/10/13 13:38
1,3,5-Trimethylbenzene	< .001	mg/l			WG686066	10/10/13 13:38
1,3-Dichlorobenzene	< .001	mg/l			WG686066	10/10/13 13:38
1,3-Dichloropropane	< .001	mg/l			WG686066	10/10/13 13:38
1,4-Dichlorobenzene	< .001	mg/l			WG686066	10/10/13 13:38
2,2-Dichloropropane	< .001	mg/l			WG686066	10/10/13 13:38
2-Butanone (MEK)	< .01	mg/l			WG686066	10/10/13 13:38
2-Chloroethyl vinyl ether	< .05	mg/l			WG686066	10/10/13 13:38
2-Chlorotoluene	< .001	mg/l			WG686066	10/10/13 13:38
4-Chlorotoluene	< .001	mg/l			WG686066	10/10/13 13:38
4-Methyl-2-pentanone (MIBK)	< .01	mg/l			WG686066	10/10/13 13:38
Acetone	< .05	mg/l			WG686066	10/10/13 13:38
Acrolein	< .025	mg/l			WG686066	10/10/13 13:38
Acrylonitrile	< .01	mg/l			WG686066	10/10/13 13:38
Benzene	< .001	mg/l			WG686066	10/10/13 13:38
Bromobenzene	< .001	mg/l			WG686066	10/10/13 13:38
Bromodichloromethane	< .001	mg/l			WG686066	10/10/13 13:38
Bromoform	< .001	mg/l			WG686066	10/10/13 13:38
Bromomethane	< .005	mg/l			WG686066	10/10/13 13:38
Carbon tetrachloride	< .001	mg/l			WG686066	10/10/13 13:38
Chlorobenzene	< .001	mg/l			WG686066	10/10/13 13:38
Chlorodibromomethane	< .001	mg/l			WG686066	10/10/13 13:38
Chloroethane	< .005	mg/l			WG686066	10/10/13 13:38
Chloroform	< .005	mg/l			WG686066	10/10/13 13:38
Chloromethane	< .0025	mg/l			WG686066	10/10/13 13:38
cis-1,2-Dichloroethene	< .001	mg/l			WG686066	10/10/13 13:38
cis-1,3-Dichloropropene	< .001	mg/l			WG686066	10/10/13 13:38
Di-isopropyl ether	< .001	mg/l			WG686066	10/10/13 13:38
Dibromomethane	< .001	mg/l			WG686066	10/10/13 13:38
Dichlorodifluoromethane	< .005	mg/l			WG686066	10/10/13 13:38
Ethylbenzene	< .001	mg/l			WG686066	10/10/13 13:38
Hexachloro-1,3-butadiene	< .001	mg/l			WG686066	10/10/13 13:38
Isopropylbenzene	< .001	mg/l			WG686066	10/10/13 13:38
Methyl tert-butyl ether	< .001	mg/l			WG686066	10/10/13 13:38
Methylene Chloride	< .005	mg/l			WG686066	10/10/13 13:38
n-Butylbenzene	< .001	mg/l			WG686066	10/10/13 13:38
n-Propylbenzene	< .001	mg/l			WG686066	10/10/13 13:38
Naphthalene	< .005	mg/l			WG686066	10/10/13 13:38
p-Isopropyltoluene	< .001	mg/l			WG686066	10/10/13 13:38
sec-Butylbenzene	< .001	mg/l			WG686066	10/10/13 13:38
Styrene	< .001	mg/l			WG686066	10/10/13 13:38
tert-Butylbenzene	< .001	mg/l			WG686066	10/10/13 13:38

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Ms. Sarah Donaldson
2456 Fortune Drive; Ste 100

Lexington, KY 40509

Quality Assurance Report
Level II

L661920

October 17, 2013

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Tetrachloroethene	< .001	mg/l			WG686066	10/10/13 13:38
Toluene	< .005	mg/l			WG686066	10/10/13 13:38
trans-1,2-Dichloroethene	< .001	mg/l			WG686066	10/10/13 13:38
trans-1,3-Dichloropropene	< .001	mg/l			WG686066	10/10/13 13:38
Trichloroethene	< .001	mg/l			WG686066	10/10/13 13:38
Trichlorofluoromethane	< .005	mg/l			WG686066	10/10/13 13:38
Vinyl chloride	< .001	mg/l			WG686066	10/10/13 13:38
Xylenes, Total	< .003	mg/l			WG686066	10/10/13 13:38
4-Bromofluorobenzene		% Rec.	102.0	71-126	WG686066	10/10/13 13:38
Dibromofluoromethane		% Rec.	97.60	78.3-121	WG686066	10/10/13 13:38
Toluene-d8		% Rec.	102.0	88.5-111	WG686066	10/10/13 13:38
cis-1,2-Dichloroethene	< .001	mg/l			WG686717	10/12/13 02:09
Vinyl chloride	< .001	mg/l			WG686717	10/12/13 02:09
4-Bromofluorobenzene		% Rec.	107.0	71-126	WG686717	10/12/13 02:09
Dibromofluoromethane		% Rec.	106.0	78.3-121	WG686717	10/12/13 02:09
Toluene-d8		% Rec.	103.0	88.5-111	WG686717	10/12/13 02:09
TOC (Total Organic Carbon)	< 1	mg/l			WG686720	10/14/13 12:52
TOC (Total Organic Carbon)	< 1	mg/l			WG687052	10/17/13 10:12

Duplicate

Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch
TOC (Total Organic Carbon)	mg/l	6.51	7.00	7.25	20	L661914-63	WG686720
TOC (Total Organic Carbon)	mg/l	0.00	0.00	0.00	20	L662305-07	WG686720
TOC (Total Organic Carbon)	mg/l	0.431	0.680	44.8*	20	L661920-06	WG687052
TOC (Total Organic Carbon)	mg/l	0.248	0.220	12.0	20	L661920-08	WG687052

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
1,1,1,2-Tetrachloroethane	mg/l	.025	0.0213	85.3	74.2-124	WG686066
1,1,1-Trichloroethane	mg/l	.025	0.0195	78.1	73.2-123	WG686066
1,1,2,2-Tetrachloroethane	mg/l	.025	0.0214	85.5	70.7-122	WG686066
1,1,2-Trichloroethane	mg/l	.025	0.0202	80.7	77.7-118	WG686066
1,1,2-Trichlorotrifluoroethane	mg/l	.025	0.0253	101.	67.2-143	WG686066
1,1-Dichloroethane	mg/l	.025	0.0192	76.9	70.7-126	WG686066
1,1-Dichloroethene	mg/l	.025	0.0219	87.6	67.8-129	WG686066
1,1-Dichloropropene	mg/l	.025	0.0201	80.4	73.1-125	WG686066
1,2,3-Trichlorobenzene	mg/l	.025	0.0219	87.8	64.9-135	WG686066
1,2,3-Trichloropropane	mg/l	.025	0.0222	88.9	71.8-121	WG686066
1,2,3-Trimethylbenzene	mg/l	.025	0.0191	76.2	72.3-116	WG686066
1,2,4-Trichlorobenzene	mg/l	.025	0.0231	92.3	69.7-136	WG686066
1,2,4-Trimethylbenzene	mg/l	.025	0.0220	88.0	75-123	WG686066
1,2-Dibromo-3-Chloropropane	mg/l	.025	0.0183	73.3	65.4-128	WG686066
1,2-Dibromoethane	mg/l	.025	0.0221	88.2	76.6-121	WG686066
1,2-Dichlorobenzene	mg/l	.025	0.0219	87.8	78.4-117	WG686066
1,2-Dichloroethane	mg/l	.025	0.0208	83.4	68.8-124	WG686066
1,2-Dichloropropane	mg/l	.025	0.0203	81.2	76.5-119	WG686066
1,3,5-Trimethylbenzene	mg/l	.025	0.0225	90.1	75.6-124	WG686066
1,3-Dichlorobenzene	mg/l	.025	0.0237	94.7	70.8-128	WG686066
1,3-Dichloropropane	mg/l	.025	0.0214	85.6	77.4-117	WG686066

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AMEC Env. & Infrastructure - Lexington
Ms. Sarah Donaldson
2456 Fortune Drive; Ste 100

Lexington, KY 40509

Quality Assurance Report
Level II

L661920

October 17, 2013

Analyte	Units	Laboratory Control Sample Known Val	Result	% Rec	Limit	Batch
1,4-Dichlorobenzene	mg/l	.025	0.0218	87.4	78.8-115	WG686066
2,2-Dichloropropane	mg/l	.025	0.0186	74.4	62.4-133	WG686066
2-Butanone (MEK)	mg/l	.125	0.0946	75.7	55-149	WG686066
2-Chloroethyl vinyl ether	mg/l	.125	0.0773	61.8	43.8-150	WG686066
2-Chlorotoluene	mg/l	.025	0.0229	91.6	74.7-122	WG686066
4-Chlorotoluene	mg/l	.025	0.0227	90.7	77.5-120	WG686066
4-Methyl-2-pentanone (MIBK)	mg/l	.125	0.103	82.4	70.5-133	WG686066
Acetone	mg/l	.125	0.0837	67.0	35.6-163	WG686066
Acrolein	mg/l	.125	0.135	108.	10-190	WG686066
Acrylonitrile	mg/l	.125	0.103	82.7	55.2-130	WG686066
Benzene	mg/l	.025	0.0198	79.3	74.8-121	WG686066
Bromobenzene	mg/l	.025	0.0215	86.1	77.5-116	WG686066
Bromodichloromethane	mg/l	.025	0.0198	79.1	75.1-116	WG686066
Bromoform	mg/l	.025	0.0211	84.6	67.5-130	WG686066
Bromomethane	mg/l	.025	0.0320	128.	49.9-162	WG686066
Carbon tetrachloride	mg/l	.025	0.0205	82.0	70.2-123	WG686066
Chlorobenzene	mg/l	.025	0.0222	89.0	78.1-119	WG686066
Chlorodibromomethane	mg/l	.025	0.0207	82.7	74-121	WG686066
Chloroethane	mg/l	.025	0.0222	88.8	61.7-135	WG686066
Chloroform	mg/l	.025	0.0209	83.7	76-121	WG686066
Chloromethane	mg/l	.025	0.0162	65.0	61.5-129	WG686066
cis-1,2-Dichloroethene	mg/l	.025	0.0197	78.9	76-119	WG686066
cis-1,3-Dichloropropene	mg/l	.025	0.0199	79.8	78.2-120	WG686066
Di-isopropyl ether	mg/l	.025	0.0184	73.6	65.6-132	WG686066
Dibromomethane	mg/l	.025	0.0215	86.0	79.5-118	WG686066
Dichlorodifluoromethane	mg/l	.025	0.0167	66.9	54.8-135	WG686066
Ethylbenzene	mg/l	.025	0.0221	88.4	78.8-122	WG686066
Hexachloro-1,3-butadiene	mg/l	.025	0.0214	85.6	64.7-129	WG686066
Isopropylbenzene	mg/l	.025	0.0237	94.8	78.6-132	WG686066
Methyl tert-butyl ether	mg/l	.025	0.0188	75.1	71.2-126	WG686066
Methylene Chloride	mg/l	.025	0.0180	72.0	70.3-120	WG686066
n-Butylbenzene	mg/l	.025	0.0224	89.8	76.2-126	WG686066
n-Propylbenzene	mg/l	.025	0.0225	90.1	78.2-122	WG686066
Naphthalene	mg/l	.025	0.0210	84.0	68.4-128	WG686066
p-Isopropyltoluene	mg/l	.025	0.0235	93.8	74-131	WG686066
sec-Butylbenzene	mg/l	.025	0.0224	89.7	74.4-127	WG686066
Styrene	mg/l	.025	0.0230	92.2	80.4-126	WG686066
tert-Butylbenzene	mg/l	.025	0.0225	90.1	75.3-126	WG686066
Tetrachloroethene	mg/l	.025	0.0222	88.9	72.6-126	WG686066
Toluene	mg/l	.025	0.0210	83.9	79.7-116	WG686066
trans-1,2-Dichloroethene	mg/l	.025	0.0179	71.8*	72.6-121	WG686066
trans-1,3-Dichloropropene	mg/l	.025	0.0199	79.7	74.3-123	WG686066
Trichloroethene	mg/l	.025	0.0207	82.6	77.7-118	WG686066
Trichlorofluoromethane	mg/l	.025	0.0259	104.	63.5-135	WG686066
Vinyl chloride	mg/l	.025	0.0181	72.2	65.9-128	WG686066
Xylenes, Total	mg/l	.075	0.0662	88.2	78.7-121	WG686066
4-Bromofluorobenzene				99.30	71-126	WG686066
Dibromofluoromethane				100.0	78.3-121	WG686066
Toluene-d8				101.0	88.5-111	WG686066
cis-1,2-Dichloroethene	mg/l	.025	0.0239	95.6	76-119	WG686717
Vinyl chloride	mg/l	.025	0.0196	78.5	65.9-128	WG686717
4-Bromofluorobenzene				109.0	71-126	WG686717
Dibromofluoromethane				98.90	78.3-121	WG686717
Toluene-d8				105.0	88.5-111	WG686717
TOC (Total Organic Carbon)	mg/l	75	71.7	95.6	85-115	WG686720

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Quality Assurance Report
Level II

L661920

October 17, 2013

Laboratory Control Sample

Analyte	Units	Known Val	Result	%Rec	Limit	Batch
TOC (Total Organic Carbon)	mg/l	75	73.2	97.7	85-115	WG687052

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
1,1,1,2-Tetrachloroethane	mg/l	0.0239	0.0213	95.0	74.2-124	11.2	20	WG686066
1,1,1-Trichloroethane	mg/l	0.0210	0.0195	84.0	73.2-123	7.35	20	WG686066
1,1,2,2-Tetrachloroethane	mg/l	0.0221	0.0214	88.0	70.7-122	3.15	20	WG686066
1,1,2-Trichloroethane	mg/l	0.0222	0.0202	89.0	77.7-118	9.76	20	WG686066
1,1,2-Trichlorotrifluoroethane	mg/l	0.0272	0.0253	108.	67.2-143	7.23	20	WG686066
1,1-Dichloroethane	mg/l	0.0209	0.0192	83.0	70.7-126	8.21	20	WG686066
1,1-Dichloroethene	mg/l	0.0234	0.0219	94.0	67.8-129	6.77	20	WG686066
1,1-Dichloropropene	mg/l	0.0214	0.0201	86.0	73.1-125	6.44	20	WG686066
1,2,3-Trichlorobenzene	mg/l	0.0239	0.0219	96.0	64.9-135	8.45	20	WG686066
1,2,3-Trichloropropane	mg/l	0.0234	0.0222	93.0	71.8-121	5.02	20	WG686066
1,2,3-Trimethylbenzene	mg/l	0.0210	0.0191	84.0	72.3-116	9.93	20	WG686066
1,2,4-Trichlorobenzene	mg/l	0.0252	0.0231	101.	69.7-136	8.86	20	WG686066
1,2,4-Trimethylbenzene	mg/l	0.0246	0.0220	98.0	75-123	11.3	20	WG686066
1,2-Dibromo-3-Chloropropane	mg/l	0.0175	0.0183	70.0	65.4-128	4.72	20	WG686066
1,2-Dibromoethane	mg/l	0.0239	0.0221	96.0	76.6-121	7.91	20	WG686066
1,2-Dichlorobenzene	mg/l	0.0243	0.0219	97.0	78.4-117	10.4	20	WG686066
1,2-Dichloroethane	mg/l	0.0220	0.0208	88.0	68.8-124	5.54	20	WG686066
1,2-Dichloropropane	mg/l	0.0221	0.0203	88.0	76.5-119	8.71	20	WG686066
1,3,5-Trimethylbenzene	mg/l	0.0253	0.0225	101.	75.6-124	11.8	20	WG686066
1,3-Dichlorobenzene	mg/l	0.0266	0.0237	106.	70.8-128	11.6	20	WG686066
1,3-Dichloropropane	mg/l	0.0234	0.0214	93.0	77.4-117	8.80	20	WG686066
1,4-Dichlorobenzene	mg/l	0.0241	0.0218	96.0	78.8-115	9.83	20	WG686066
2,2-Dichloropropane	mg/l	0.0202	0.0186	81.0	62.4-133	8.42	20	WG686066
2-Butanone (MEK)	mg/l	0.0873	0.0946	70.0	55-149	8.06	20	WG686066
2-Chloroethyl vinyl ether	mg/l	0.0798	0.0773	64.0	43.8-150	3.27	20	WG686066
2-Chlorotoluene	mg/l	0.0251	0.0229	100.	74.7-122	9.28	20	WG686066
4-Chlorotoluene	mg/l	0.0254	0.0227	102.	77.5-120	11.4	20	WG686066
4-Methyl-2-pentanone (MIBK)	mg/l	0.0972	0.103	78.0	70.5-133	5.84	20	WG686066
Acetone	mg/l	0.0781	0.0837	62.0	35.6-163	6.92	23.9	WG686066
Acrolein	mg/l	0.128	0.135	102.	10-190	5.38	28.1	WG686066
Acrylonitrile	mg/l	0.100	0.103	80.0	55.2-130	3.09	20	WG686066
Benzene	mg/l	0.0213	0.0198	85.0	74.8-121	7.27	20	WG686066
Bromobenzene	mg/l	0.0237	0.0215	95.0	77.5-116	9.75	20	WG686066
Bromodichloromethane	mg/l	0.0212	0.0198	85.0	75.1-116	7.13	20	WG686066
Bromoform	mg/l	0.0222	0.0211	89.0	67.5-130	4.71	20	WG686066
Bromomethane	mg/l	0.0355	0.0320	142.	49.9-162	10.3	20	WG686066
Carbon tetrachloride	mg/l	0.0220	0.0205	88.0	70.2-123	7.03	20	WG686066
Chlorobenzene	mg/l	0.0247	0.0222	99.0	78.1-119	10.3	20	WG686066
Chlorodibromomethane	mg/l	0.0221	0.0207	88.0	74-121	6.84	20	WG686066
Chloroethane	mg/l	0.0234	0.0222	94.0	61.7-135	5.20	20	WG686066
Chloroform	mg/l	0.0226	0.0209	90.0	76-121	7.85	20	WG686066
Chloromethane	mg/l	0.0172	0.0162	69.0	61.5-129	5.66	20	WG686066
cis-1,2-Dichloroethene	mg/l	0.0209	0.0197	84.0	76-119	5.72	20	WG686066
cis-1,3-Dichloropropene	mg/l	0.0214	0.0199	86.0	78.2-120	6.98	20	WG686066
Di-isopropyl ether	mg/l	0.0197	0.0184	79.0	65.6-132	6.65	20	WG686066
Dibromomethane	mg/l	0.0224	0.0215	90.0	79.5-118	4.22	20	WG686066
Dichlorodifluoromethane	mg/l	0.0183	0.0167	73.0	54.8-139	8.95	20	WG686066
Ethylbenzene	mg/l	0.0248	0.0221	99.0	78.8-122	11.6	20	WG686066
Hexachloro-1,3-butadiene	mg/l	0.0242	0.0214	97.0	64.7-129	12.1	20	WG686066
Isopropylbenzene	mg/l	0.0270	0.0237	108.	78.6-132	13.1	20	WG686066
Methyl tert-butyl ether	mg/l	0.0193	0.0188	77.0	71.2-126	2.64	20	WG686066
Methylene Chloride	mg/l	0.0193	0.0180	77.0	70.3-120	6.97	20	WG686066
n-Butylbenzene	mg/l	0.0248	0.0224	99.0	76.2-126	10.1	20	WG686066
n-Propylbenzene	mg/l	0.0254	0.0225	102.	78.2-122	12.2	20	WG686066

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Quality Assurance Report
Level II

L661920

October 17, 2013

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
Naphthalene	mg/l	0.0221	0.0210	88.0	68.4-128	5.19	20	WG686066
p-Isopropyltoluene	mg/l	0.0264	0.0235	106.	74-131	12.0	20	WG686066
sec-Butylbenzene	mg/l	0.0254	0.0224	102.	74.4-127	12.5	20	WG686066
Styrene	mg/l	0.0258	0.0230	103.	80.4-126	11.4	20	WG686066
tert-Butylbenzene	mg/l	0.0254	0.0225	102.	75.3-126	12.0	20	WG686066
Tetrachloroethene	mg/l	0.0250	0.0222	100.	72.6-126	11.6	20	WG686066
Toluene	mg/l	0.0228	0.0210	91.0	79.7-116	8.27	20	WG686066
trans-1,2-Dichloroethene	mg/l	0.0194	0.0179	78.0	72.6-121	7.81	20	WG686066
trans-1,3-Dichloropropene	mg/l	0.0208	0.0199	83.0	74.3-123	4.34	20	WG686066
Trichloroethene	mg/l	0.0230	0.0207	92.0	77.7-118	10.8	20	WG686066
Trichlorofluoromethane	mg/l	0.0273	0.0259	109.	63.5-135	5.42	20	WG686066
Vinyl chloride	mg/l	0.0190	0.0181	76.0	65.9-128	5.02	20	WG686066
Xylenes, Total	mg/l	0.0739	0.0662	98.0	78.7-121	11.0	20	WG686066
4-Bromofluorobenzene				102.0	71-126			WG686066
Dibromofluoromethane				99.0	78.3-121			WG686066
Toluene-d8				102.0	88.5-111			WG686066
cis-1,2-Dichloroethene	mg/l	0.0241	0.0239	96.0	76-119	0.680	20	WG686717
Vinyl chloride	mg/l	0.0209	0.0196	84.0	65.9-128	6.37	20	WG686717
4-Bromofluorobenzene				110.0	71-126			WG686717
Dibromofluoromethane				101.0	78.3-121			WG686717
Toluene-d8				103.0	88.5-111			WG686717
TOC (Total Organic Carbon)	mg/l	71.6	71.7	95.0	85-115	0.154	20	WG686720
TOC (Total Organic Carbon)	mg/l	73.1	73.2	98.0	85-115	0.150	20	WG687052

Matrix Spike

Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
1,1,1,2-Tetrachloroethane	mg/l	0.0217	0.0	.025	87.0	64-128	L661798-01	WG686066
1,1,1-Trichloroethane	mg/l	0.0207	0.0	.025	83.0	58.7-134	L661798-01	WG686066
1,1,2,2-Tetrachloroethane	mg/l	0.0209	0.0	.025	84.0	56-132	L661798-01	WG686066
1,1,2-Trichloroethane	mg/l	0.0206	0.0	.025	82.0	66.3-125	L661798-01	WG686066
1,1,2-Trichlorotrifluoroethane	mg/l	0.0269	0.0	.025	110.	54.8-154	L661798-01	WG686066
1,1-Dichloroethane	mg/l	0.0204	0.0	.025	82.0	58.5-132	L661798-01	WG686066
1,1-Dichloroethene	mg/l	0.0237	0.0	.025	95.0	51.1-140	L661798-01	WG686066
1,1-Dichloropropene	mg/l	0.0218	0.0	.025	87.0	57.3-136	L661798-01	WG686066
1,2,3-Trichlorobenzene	mg/l	0.0233	0.0	.025	93.0	59.1-138	L661798-01	WG686066
1,2,3-Trichloropropane	mg/l	0.0220	0.0	.025	88.0	61.4-128	L661798-01	WG686066
1,2,3-Trimethylbenzene	mg/l	0.0198	0.0	.025	79.0	61.3-122	L661798-01	WG686066
1,2,4-Trichlorobenzene	mg/l	0.0248	0.0	.025	99.0	63.6-143	L661798-01	WG686066
1,2,4-Trimethylbenzene	mg/l	0.0229	0.0	.025	92.0	57.4-137	L661798-01	WG686066
1,2-Dibromo-3-Chloropropane	mg/l	0.0176	0.0	.025	70.0	57.3-136	L661798-01	WG686066
1,2-Dibromoethane	mg/l	0.0222	0.0	.025	89.0	67.1-125	L661798-01	WG686066
1,2-Dichlorobenzene	mg/l	0.0232	0.0	.025	93.0	68.2-123	L661798-01	WG686066
1,2-Dichloroethane	mg/l	0.0216	0.0	.025	86.0	60-126	L661798-01	WG686066
1,2-Dichloropropane	mg/l	0.0212	0.0	.025	85.0	64.2-123	L661798-01	WG686066
1,3,5-Trimethylbenzene	mg/l	0.0234	0.0	.025	94.0	63.6-132	L661798-01	WG686066
1,3-Dichlorobenzene	mg/l	0.0247	0.0	.025	99.0	63.1-131	L661798-01	WG686066
1,3-Dichloropropane	mg/l	0.0215	0.0	.025	86.0	67.9-121	L661798-01	WG686066
1,4-Dichlorobenzene	mg/l	0.0227	0.0	.025	91.0	68.6-123	L661798-01	WG686066
2,2-Dichloropropane	mg/l	0.0203	0.0	.025	81.0	50.5-144	L661798-01	WG686066
2-Butanone (MEK)	mg/l	0.0762	0.0	.125	61.0	22.4-138	L661798-01	WG686066
2-Chloroethyl vinyl ether	mg/l	0.00891	0.0	.125	7.10*	10-155	L661798-01	WG686066
2-Chlorotoluene	mg/l	0.0235	0.0	.025	94.0	63.6-128	L661798-01	WG686066

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Quality Assurance Report
Level II

L661920

October 17, 2013

Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
4-Chlorotoluene	mg/l	0.0239	0.0	.025	96.0	65.7-127	L661798-01	WG686066
4-Methyl-2-pentanone (MIBK)	mg/l	0.0962	0.0	.125	77.0	60.8-140	L661798-01	WG686066
Acetone	mg/l	0.0410	0.000635	.125	32.0	10-130	L661798-01	WG686066
Acrolein	mg/l	0.121	0.0	.125	97.0	10-200	L661798-01	WG686066
Acrylonitrile	mg/l	0.0999	0.0	.125	80.0	49.4-133	L661798-01	WG686066
Benzene	mg/l	0.0211	0.0	.025	84.0	54.3-133	L661798-01	WG686066
Bromobenzene	mg/l	0.0221	0.0	.025	88.0	63.9-124	L661798-01	WG686066
Bromodichloromethane	mg/l	0.0208	0.0	.025	83.0	63.9-121	L661798-01	WG686066
Bromoform	mg/l	0.0207	0.0	.025	83.0	59.5-134	L661798-01	WG686066
Bromomethane	mg/l	0.0353	0.0	.025	140.	41.7-155	L661798-01	WG686066
Carbon tetrachloride	mg/l	0.0218	0.0	.025	87.0	55.7-134	L661798-01	WG686066
Chlorobenzene	mg/l	0.0230	0.0	.025	92.0	67-129	L661798-01	WG686066
Chlorodibromomethane	mg/l	0.0204	0.0	.025	82.0	64.3-125	L661798-01	WG686066
Chloroethane	mg/l	0.0245	0.0	.025	98.0	51.6-136	L661798-01	WG686066
Chloroform	mg/l	0.0228	0.000807	.025	88.0	63-129	L661798-01	WG686066
Chloromethane	mg/l	0.0179	0.0	.025	72.0	42.4-135	L661798-01	WG686066
cis-1,2-Dichloroethene	mg/l	0.0208	0.0	.025	83.0	59.2-129	L661798-01	WG686066
cis-1,3-Dichloropropene	mg/l	0.0203	0.0	.025	81.0	66.4-125	L661798-01	WG686066
Di-isopropyl ether	mg/l	0.0188	0.0	.025	75.0	56.9-136	L661798-01	WG686066
Dibromomethane	mg/l	0.0216	0.0	.025	86.0	68.2-124	L661798-01	WG686066
Dichlorodifluoromethane	mg/l	0.0188	0.0	.025	75.0	40.6-144	L661798-01	WG686066
Ethylbenzene	mg/l	0.0234	0.0	.025	94.0	61.4-133	L661798-01	WG686066
Hexachloro-1,3-butadiene	mg/l	0.0221	0.0	.025	88.0	55.1-136	L661798-01	WG686066
Isopropylbenzene	mg/l	0.0248	0.0	.025	99.0	66.8-141	L661798-01	WG686066
Methyl tert-butyl ether	mg/l	0.0193	0.0	.025	77.0	57.7-134	L661798-01	WG686066
Methylene Chloride	mg/l	0.0191	0.0	.025	76.0	58.1-122	L661798-01	WG686066
n-Butylbenzene	mg/l	0.0239	0.0	.025	96.0	62.7-140	L661798-01	WG686066
n-Propylbenzene	mg/l	0.0238	0.0	.025	95.0	65.9-131	L661798-01	WG686066
Naphthalene	mg/l	0.0215	0.0	.025	86.0	50-135	L661798-01	WG686066
p-Isopropyltoluene	mg/l	0.0246	0.0	.025	98.0	63.2-139	L661798-01	WG686066
sec-Butylbenzene	mg/l	0.0233	0.0	.025	93.0	62.2-136	L661798-01	WG686066
Styrene	mg/l	0.0237	0.0	.025	95.0	66.8-133	L661798-01	WG686066
tert-Butylbenzene	mg/l	0.0234	0.0	.025	94.0	63.3-134	L661798-01	WG686066
Tetrachloroethene	mg/l	0.0233	0.0	.025	93.0	53-139	L661798-01	WG686066
Toluene	mg/l	0.0225	0.0	.025	90.0	61.4-130	L661798-01	WG686066
trans-1,2-Dichloroethene	mg/l	0.0191	0.0	.025	76.0	56.5-129	L661798-01	WG686066
trans-1,3-Dichloropropene	mg/l	0.0197	0.0	.025	79.0	64.1-128	L661798-01	WG686066
Trichloroethene	mg/l	0.0218	0.0	.025	87.0	44.1-149	L661798-01	WG686066
Trichlorofluoromethane	mg/l	0.0275	0.0	.025	110.	49.6-145	L661798-01	WG686066
Vinyl chloride	mg/l	0.0199	0.0	.025	80.0	47.8-137	L661798-01	WG686066
Xylenes, Total	mg/l	0.0691	0.0	.075	92.0	63.3-131	L661798-01	WG686066
4-Bromofluorobenzene					99.20	73-126		WG686066
Dibromofluoromethane					100.0	78.3-121		WG686066
Toluene-d8					102.0	88.5-111		WG686066
cis-1,2-Dichloroethene	mg/l	0.0254	0.0	.025	100.	59.2-129	L662654-13	WG686717
Vinyl chloride	mg/l	0.0227	0.0	.025	91.0	47.8-137	L662654-13	WG686717
4-Bromofluorobenzene					107.0	73-126		WG686717
Dibromofluoromethane					106.0	78.3-121		WG686717
Toluene-d8					107.0	88.5-111		WG686717
TOC (Total Organic Carbon)	mg/l	1950	980.	50	96.7	80-120	L661920-02	WG686720
TOC (Total Organic Carbon)	mg/l	62.6	12.0	50	101.	80-120	L662577-01	WG687052

* Performance of this Analyte is outside of established criteria.
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AMEC Env. & Infrastructure - Lexington
Ms. Sarah Donaldson
2456 Fortune Drive; Ste 100

Lexington, KY 40509

Quality Assurance Report
Level II

L661920

October 17, 2013

Matrix Spike Duplicate

Analyte	Units	MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
1,1,1,2-Tetrachloroethane	mg/l	0.0240	0.0217	96.0	64-128	10.2	20	L661798-01	WG686066
1,1,1-Trichloroethane	mg/l	0.0218	0.0207	87.2	58.7-134	5.36	20	L661798-01	WG686066
1,1,2,2-Tetrachloroethane	mg/l	0.0235	0.0209	94.1	56-132	11.9	22.2	L661798-01	WG686066
1,1,2-Trichloroethane	mg/l	0.0231	0.0206	92.4	66.3-125	11.4	20	L661798-01	WG686066
1,1,2-Trichlorotrifluoroethane	mg/l	0.0283	0.0269	113.	54.8-154	4.84	22.5	L661798-01	WG686066
1,1-Dichloroethane	mg/l	0.0215	0.0204	86.2	58.5-132	5.39	20	L661798-01	WG686066
1,1-Dichloroethene	mg/l	0.0251	0.0237	100.	51.1-140	5.70	20.2	L661798-01	WG686066
1,1-Dichloropropene	mg/l	0.0226	0.0218	90.4	57.3-136	3.59	20	L661798-01	WG686066
1,2,3-Trichlorobenzene	mg/l	0.0249	0.0233	99.6	59.1-138	6.78	23.7	L661798-01	WG686066
1,2,3-Trichloropropane	mg/l	0.0245	0.0220	98.0	61.4-128	10.8	22.4	L661798-01	WG686066
1,2,3-Trimethylbenzene	mg/l	0.0210	0.0198	84.2	61.3-122	6.36	20	L661798-01	WG686066
1,2,4-Trichlorobenzene	mg/l	0.0260	0.0248	104.	63.6-143	4.75	21.9	L661798-01	WG686066
1,2,4-Trimethylbenzene	mg/l	0.0255	0.0229	102.	57.4-137	10.7	20	L661798-01	WG686066
1,2-Dibromo-3-Chloropropane	mg/l	0.0188	0.0176	75.4	57.3-136	6.74	27	L661798-01	WG686066
1,2-Dibromoethane	mg/l	0.0245	0.0222	98.0	67.1-125	9.89	20	L661798-01	WG686066
1,2-Dichlorobenzene	mg/l	0.0246	0.0232	98.5	68.2-123	6.00	20	L661798-01	WG686066
1,2-Dichloroethane	mg/l	0.0228	0.0216	91.1	60-126	5.51	20	L661798-01	WG686066
1,2-Dichloropropane	mg/l	0.0223	0.0212	89.3	64.2-123	5.23	20	L661798-01	WG686066
1,3,5-Trimethylbenzene	mg/l	0.0262	0.0234	105.	63.6-132	11.1	20.5	L661798-01	WG686066
1,3-Dichlorobenzene	mg/l	0.0271	0.0247	108.	63.1-131	9.35	20	L661798-01	WG686066
1,3-Dichloropropane	mg/l	0.0240	0.0215	96.0	67.9-121	11.2	20	L661798-01	WG686066
1,4-Dichlorobenzene	mg/l	0.0243	0.0227	97.0	68.6-123	6.48	20	L661798-01	WG686066
2,2-Dichloropropane	mg/l	0.0211	0.0203	84.2	50.5-144	3.76	21.9	L661798-01	WG686066
2-Butanone (MEK)	mg/l	0.0766	0.0762	61.3	22.4-138	0.520	27	L661798-01	WG686066
2-Chloroethyl vinyl ether	mg/l	0.00206	0.00891	1.64*	10-155	125.*	20	L661798-01	WG686066
2-Chlorotoluene	mg/l	0.0263	0.0235	105.	63.6-128	11.4	20	L661798-01	WG686066
4-Chlorotoluene	mg/l	0.0265	0.0239	106.	65.7-127	10.5	20	L661798-01	WG686066
4-Methyl-2-pentanone (MIBK)	mg/l	0.102	0.0962	81.8	60.8-140	6.03	25.1	L661798-01	WG686066
Acetone	mg/l	0.0444	0.0410	35.0	10-130	7.75	27.9	L661798-01	WG686066
Acrolein	mg/l	0.127	0.121	102.	10-200	4.97	27.7	L661798-01	WG686066
Acrylonitrile	mg/l	0.109	0.0999	86.9	49.4-133	8.38	25.3	L661798-01	WG686066
Benzene	mg/l	0.0222	0.0211	88.9	54.3-133	5.17	20	L661798-01	WG686066
Bromobenzene	mg/l	0.0250	0.0221	99.8	63.9-124	12.3	20	L661798-01	WG686066
Bromodichloromethane	mg/l	0.0215	0.0208	85.9	63.9-121	3.05	20	L661798-01	WG686066
Bromoform	mg/l	0.0236	0.0207	94.2	59.5-134	13.0	20.5	L661798-01	WG686066
Bromomethane	mg/l	0.0368	0.0353	147.	41.7-155	3.32	21.9	L661798-01	WG686066
Carbon tetrachloride	mg/l	0.0232	0.0218	92.7	55.7-134	6.08	20	L661798-01	WG686066
Chlorobenzene	mg/l	0.0254	0.0230	102.	67-125	9.77	20	L661798-01	WG686066
Chlorodibromomethane	mg/l	0.0237	0.0204	94.7	64.3-125	14.7	20.8	L661798-01	WG686066
Chloroethane	mg/l	0.0240	0.0245	96.2	51.5-136	1.76	40	L661798-01	WG686066
Chloroform	mg/l	0.0242	0.0228	93.6	63-129	5.81	20	L661798-01	WG686066
Chloromethane	mg/l	0.0189	0.0179	75.5	42.4-135	5.36	20	L661798-01	WG686066
cis-1,2-Dichloroethene	mg/l	0.0220	0.0208	88.0	59.2-129	5.76	20	L661798-01	WG686066
cis-1,3-Dichloropropene	mg/l	0.0210	0.0203	84.2	66.4-125	3.83	20	L661798-01	WG686066
Di-isopropyl ether	mg/l	0.0201	0.0188	80.5	56.9-136	6.56	20	L661798-01	WG686066
Dibromomethane	mg/l	0.0230	0.0216	91.9	68.2-124	6.29	20	L661798-01	WG686066
Dichlorodifluoromethane	mg/l	0.0199	0.0188	79.7	40.6-144	6.04	20.2	L661798-01	WG686066
Ethylbenzene	mg/l	0.0255	0.0234	102.	61.4-133	8.37	20	L661798-01	WG686066
Hexachloro-1,3-butadiene	mg/l	0.0239	0.0221	95.4	55.1-136	7.53	23.6	L661798-01	WG686066
Isopropylbenzene	mg/l	0.0277	0.0248	111.	66.8-141	11.3	20	L661798-01	WG686066
Methyl tert-butyl ether	mg/l	0.0202	0.0193	80.9	57.7-134	4.83	20	L661798-01	WG686066
Methylene Chloride	mg/l	0.0199	0.0191	79.8	58.1-122	4.20	20	L661798-01	WG686066
n-Butylbenzene	mg/l	0.0252	0.0239	101.	62.7-140	5.34	30.3	L661798-01	WG686066
n-Propylbenzene	mg/l	0.0264	0.0238	106.	65.9-132	10.6	20	L661798-01	WG686066
Naphthalene	mg/l	0.0233	0.0215	93.1	58-135	8.11	25.5	L661798-01	WG686066
p-Isopropyltoluene	mg/l	0.0274	0.0246	110.	63.2-139	11.0	20.4	L661798-01	WG686066
sec-Butylbenzene	mg/l	0.0262	0.0233	105.	62.2-136	11.6	20.3	L661798-01	WG686066
Styrene	mg/l	0.0265	0.0237	106.	66.8-133	11.3	20	L661798-01	WG686066
tert-Butylbenzene	mg/l	0.0258	0.0234	103.	63.3-134	9.69	21	L661798-01	WG686066
Tetrachloroethene	mg/l	0.0263	0.0233	105.	53-139	12.2	20	L661798-01	WG686066

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Ms. Sarah Donaldson
2456 Fortune Drive; Ste 100

Lexington, KY 40509

Quality Assurance Report
Level II

L661920

October 17, 2013

Analyte	Units	Matrix Spike Duplicate MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Toluene	mg/l	0.0234	0.0225	93.7	61.4-130	4.25	20	L661798-01	WG686066
trans-1,2-Dichloroethene	mg/l	0.0197	0.0191	78.6	56.5-129	2.83	20	L661798-01	WG686066
trans-1,3-Dichloropropene	mg/l	0.0211	0.0197	84.5	64.1-128	7.20	20	L661798-01	WG686066
Trichloroethene	mg/l	0.0230	0.0218	91.8	44.1-149	5.15	20	L661798-01	WG686066
Trichlorofluoromethane	mg/l	0.0285	0.0275	114.	49.6-145	3.40	21.2	L661798-01	WG686066
Vinyl chloride	mg/l	0.0211	0.0199	84.2	47.8-137	5.65	20	L661798-01	WG686066
Xylenes, Total	mg/l	0.0766	0.0691	102.	63.3-131	10.2	20	L661798-01	WG686066
4-Bromofluorobenzene				106.0	71-126				WG686066
Dibromofluoromethane				100.0	78.3-121				WG686066
Toluene-d8				101.0	88.5-111				WG686066
cis-1,2-Dichloroethene	mg/l	0.0244	0.0254	97.4	59.2-129	4.21	20	L662654-13	WG686717
Vinyl chloride	mg/l	0.0229	0.0227	91.6	47.8-137	0.860	20	L662654-13	WG686717
4-Bromofluorobenzene				109.0	71-126				WG686717
Dibromofluoromethane				106.0	78.3-121				WG686717
Toluene-d8				98.60	88.5-111				WG686717
TOC (Total Organic Carbon)	mg/l	1960	1950	98.0	80-120	0.676	20	L661920-02	WG686720
TOC (Total Organic Carbon)	mg/l	61.8	62.6	99.5	80-120	1.30	20	L662577-01	WG687052

Batch number /Run number / Sample number cross reference

WG686066: R2839127: L661920-01 02 03 04 05 06 07 08 09
WG686717: R2839481: L661920-04 08
WG686720: R2840262: L661920-01 02 03 04 05 07
WG687052: R2841214: L661920-06 08

* + Calculations are performed prior to rounding of reported values.
* Performance of this Analyte is outside of established criteria.
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Lexington, KY 40509

Quality Assurance Report
Level II

I661920

October 17, 2013

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

AMEC Env. & Infrastructure - Lexington

2456 Fortune Drive; Ste 100
Lexington. KY 40509

Report to: Ms. Sarah Donaldson

Billing Information: Ms. Mary Beth Fields
11003 Bluegrass Pkwy., Ste. 690
Louisville, KY 40299

Email To: sarah.donaldson@amec.com

Project Description: RBTC - Leitchfield, KY

City/State Collected:

Phone: 859-255-3308
Fax: 859-254-2327

Client Project #: 6251-12-1002

Lab Project #: MACTECLEX-RBTC

Collected by (print): Jacob A. Morris

Site/Facility ID #:

P.O. #: C012502033

Collected by (signature):

Immediately Packed on Ice: N

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X_Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TOC 250mlAmb-Septa-HCl	V8260 40mlAmb-HCl	VOC Blank-40mLAmb-HCl								Rem./Contaminant	Sample # (lab only)
MW-5	Grab	GW	NA	10.7.13	1635	3	X	X									*	-01
MW-6		GW			1505	3	X	X									*	-02
MW-13		GW			1615	3	X	X									*	-03
MW-21		GW			1300	3	X	X									*	-04
MW-22		GW			1235	3	X	X									*	-05
MW-23		GW			1410	3	X	X									*	-06
MW-17		GW			1750	3	X	X									*	-07
SW-4		GW			1100	3	X	X										-08
Trip Blank	—	GW	—	—	—	~~3~~	~~X~~	~~X~~	X									-09
		GW				~~3~~	~~X~~	~~X~~										

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks: Possible 3 DMe. See Leslie for special handling.
5704 6061 5543

pH _____ Temp _____
Flow _____ Other _____

Chain of Custody Page 1 of 1

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L# L661920
1 G183

Acctnum: MACTECLEX
Template: T89498
Prelogin: P444667
TSR: 044 - Leslie Newton
PB: 10.1 MB
Shipped Via: FedEX Ground

Relinquished by: (Signature)	Date	Time	Received by: (Signature)
	10-7-2013	2024	
Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Relinquished by: (Signature)	Date	Time	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐ _____
Temp: 3.6°C Bottles Received: 25
Date: 10-8-13 Time: 0900

Hold #
Condition: (lab use only) JW
COC Seal Intact: ✓ Y ___N ___NA OK
pH Checked: ~2 NCF:

APPENDIX B

Photo Log

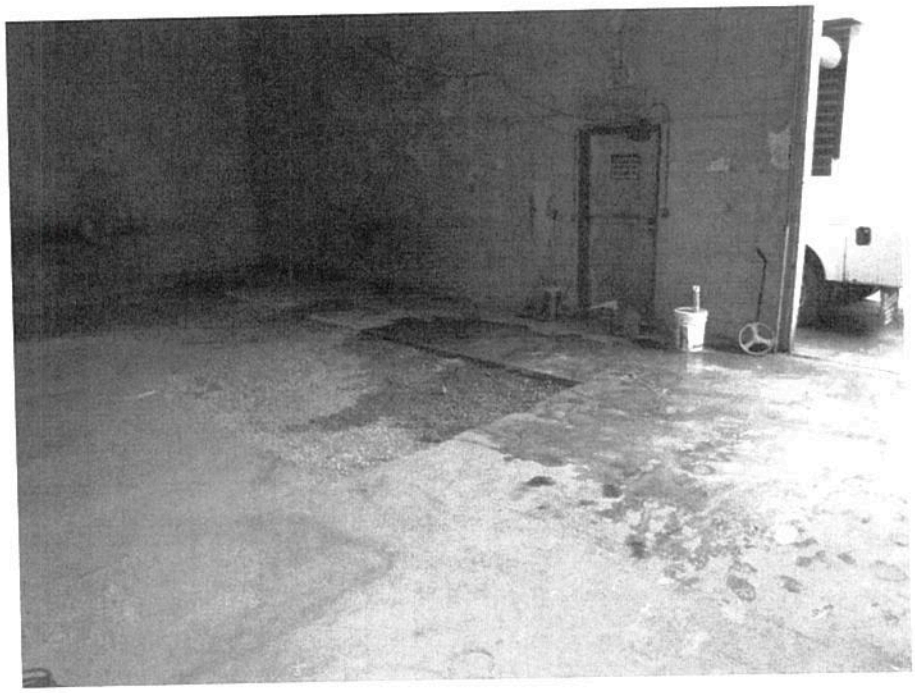


PHOTO 1:

Marking locations in Zone 7 Pit BOS 100 injections.

PHOTO 2:

Marking locations in Zone 6 BOS 100 injections.

PHOTO 3:

Marking locations in Zone 2 BOS 100 injections.

PHOTO 4:

Concrete coring for Zone 1B BOS 100 injection locations.

PHOTO 5:

Cored locations for Zone 1B BOS 100 injections.

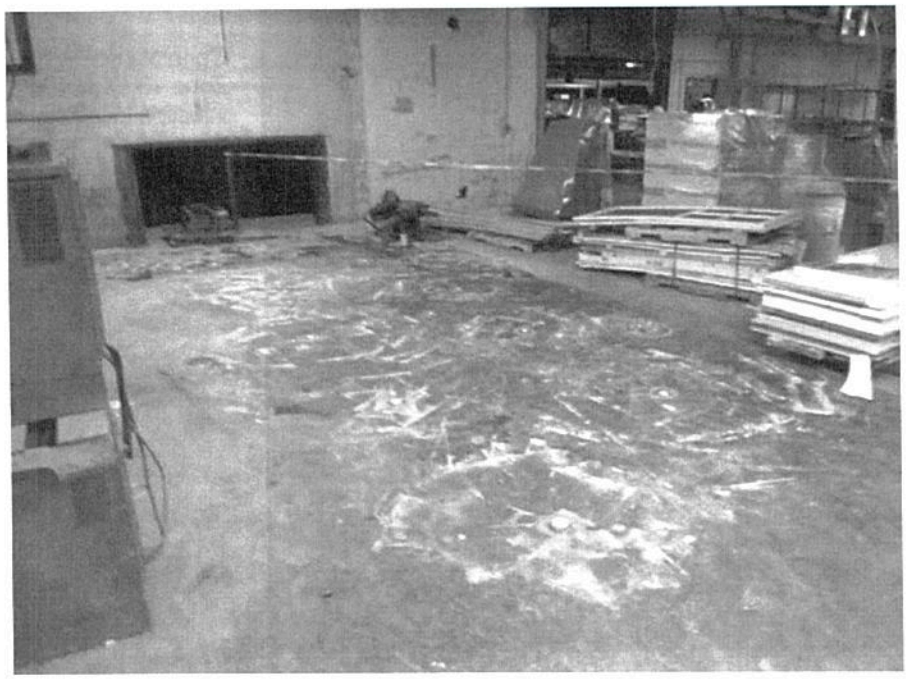


PHOTO 6:

Cored locations for Zone 6 BOS 100 injections.

PHOTO 7:

Cored locations for Zone 2 BOS 100 injections.

PHOTO 8:

Installation of well TW-16.

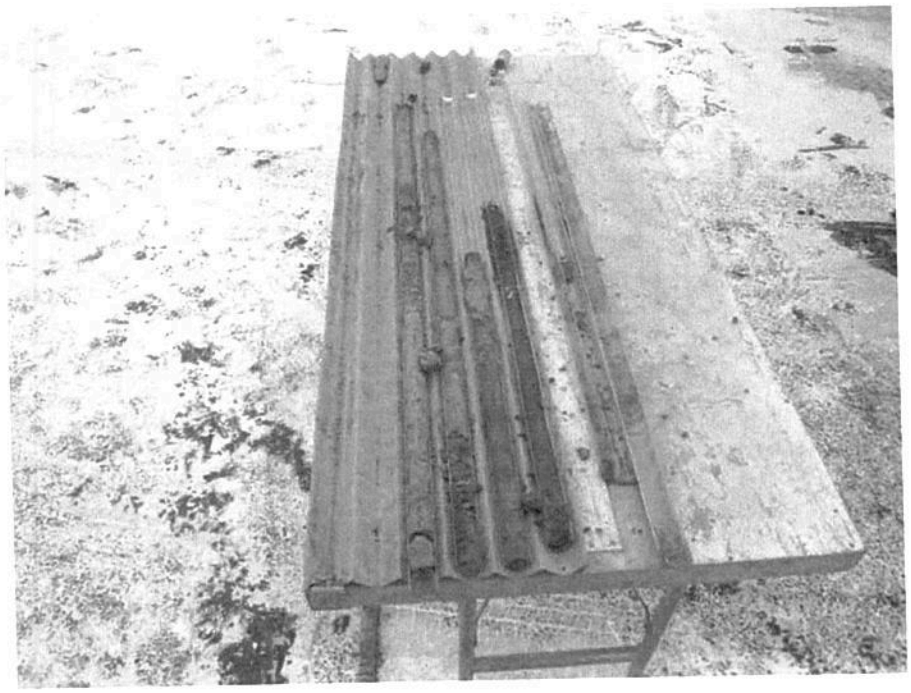


PHOTO 9:

Soil and shale from boring TW-16.

PHOTO 10:

Close up of soil (bottom) and shale (top) from boring.

PHOTO 11:

View of location of wells TW-16 and TW-17, near MW-8 and MW-8M.

PHOTO 12:

Markings near MW-5 and MW-5M by The Underground Detective, showing sanitary pipeline.

PHOTO 13:

Markings inside west gate by The Underground Detective, showing gas lines.

PHOTO 14:

Same

PHOTO 15:

Markings in Zone 1B by the Underground Detective, showing storm sewer line.

PHOTO 16:

3DMe injection in progress at F12P. Batch mixing trailer in background.

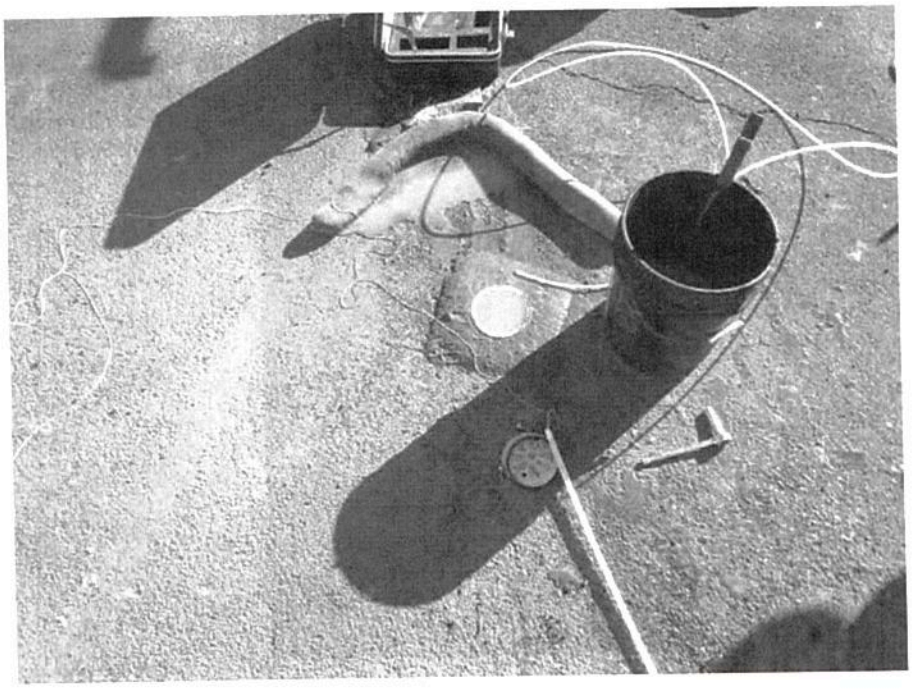


PHOTO 17:

3DMe solution temporarily over-flowing injection point. Absorbent sock placed to collect loose solution.

PHOTO 18:

Daylighting of 3DMe in parking area through cracks in pavement.

PHOTO 19:

3DMe injection in progress. 3DMe visible in injection hole.

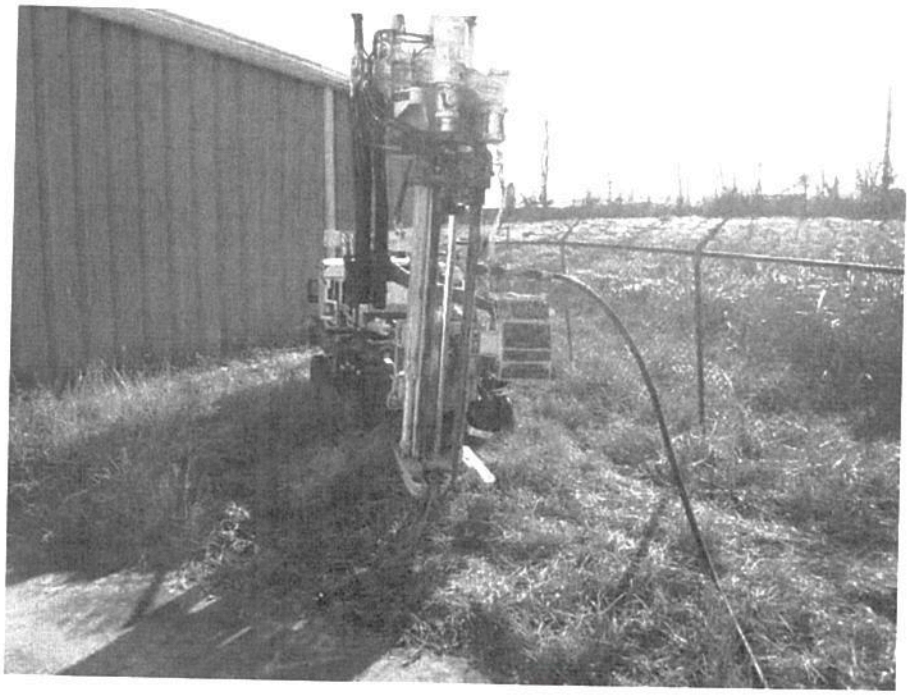


PHOTO 20:

3DMe injection near MW-3.

PHOTO 21:

Same. Daylighting between grassy area and concrete pad.

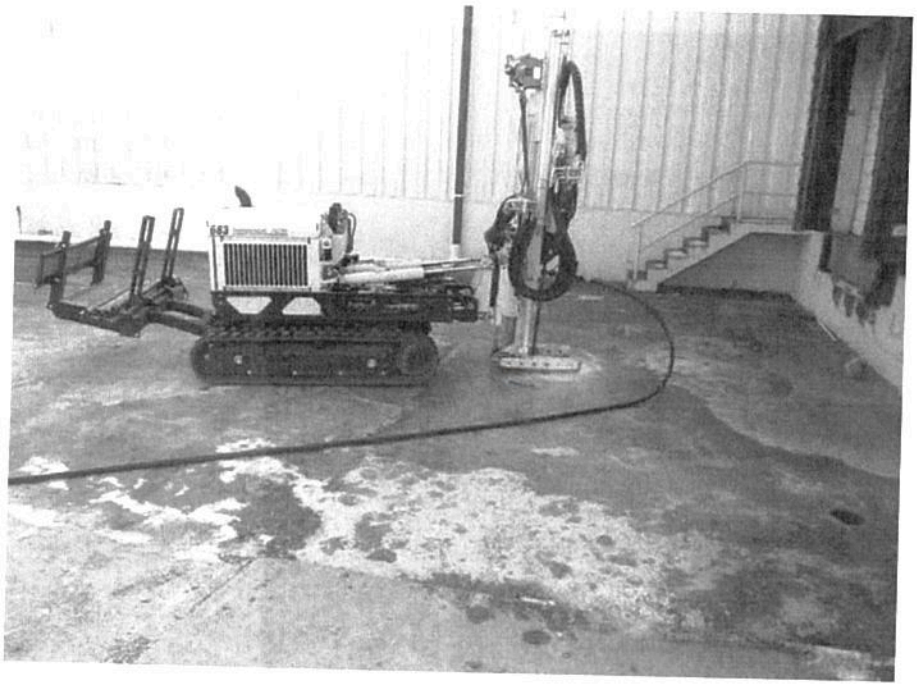


PHOTO 22:

3DMe injection near MW-5 and MW-5M.

PHOTO 23:

Same. Daylighting seen between concrete ramp and loading dock.

PHOTO 24:

Newly installed permanent injection points F35P and F36P near west gate.

PHOTO 25:

AST representatives hydrating BOS 100 drums to displace nitrogen and never contact with air.

PHOTO 26:

Preparing to inject BOS 100 using Geoprobe 7822DT rig in Zone 7.

PHOTO 25:

AST representatives hydrating BOS 100 drums to displace nitrogen and never contact with air.

PHOTO 26:

Preparing to inject BOS 100 using Geoprobe 7822DT rig in Zone 7.

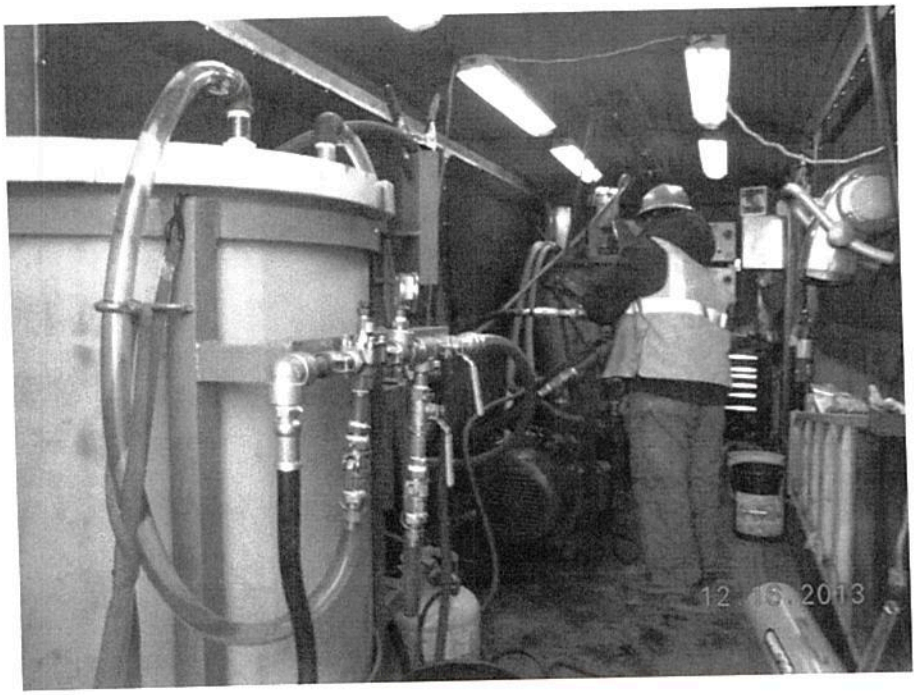


PHOTO 27:

AST representative mixing batch of BOS 100. Water tank in foreground.

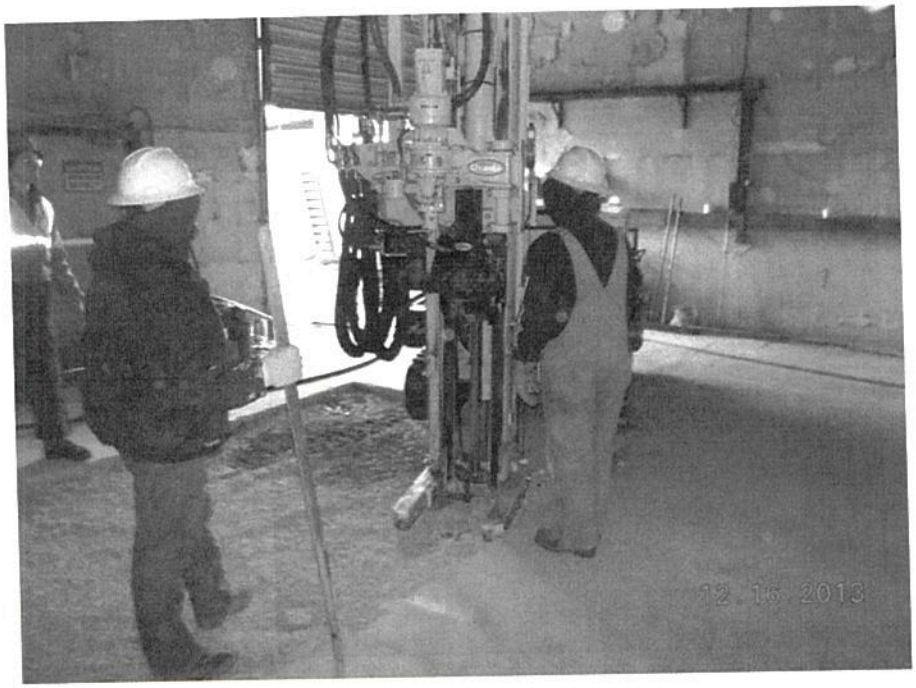


PHOTO 28:

Setting up to inject BOS 100 in Zone 7 (Pit G).

PHOTO 29:

Geoprobe using direct push to reach depth necessary for injecting BOS 100 below backfilled WWTR pit.

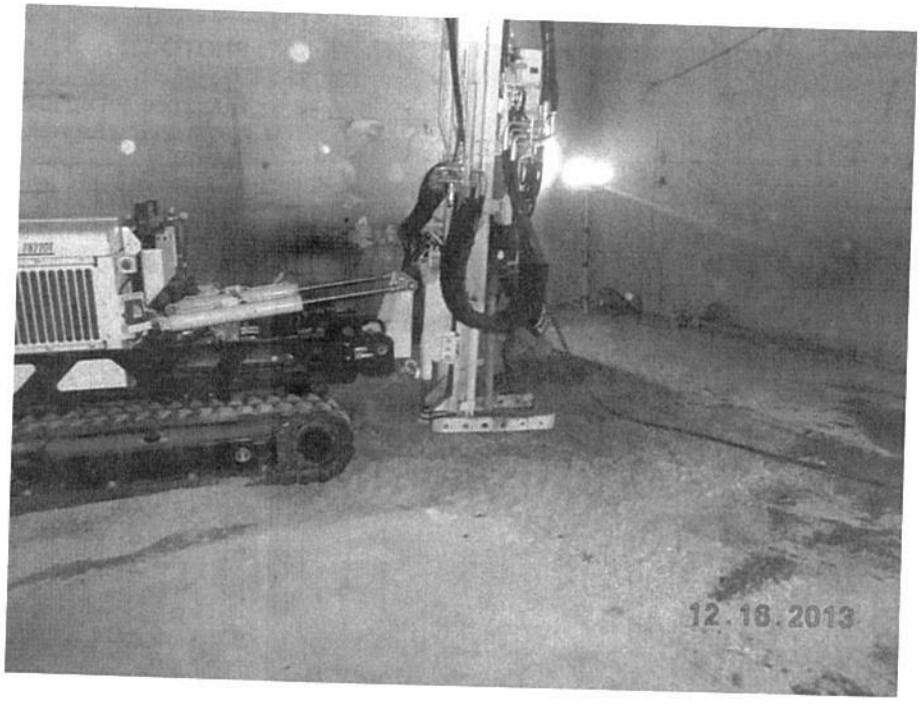


PHOTO 30:

Injecting BOS 100 in Zone 7 (Pit E).

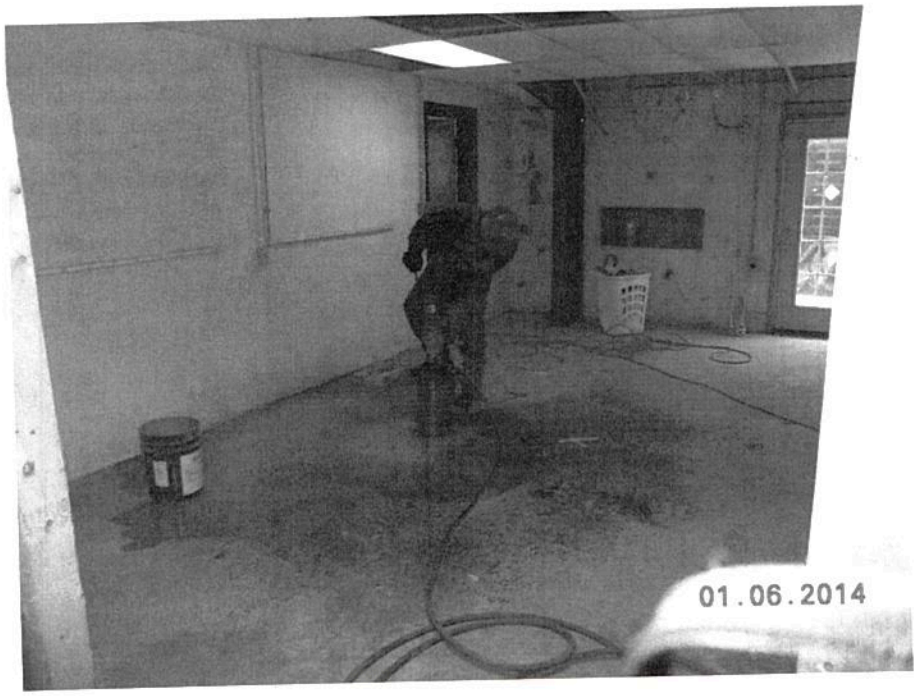


PHOTO 31:

Concrete coring for installation of borings TW-18A and TW-18B.

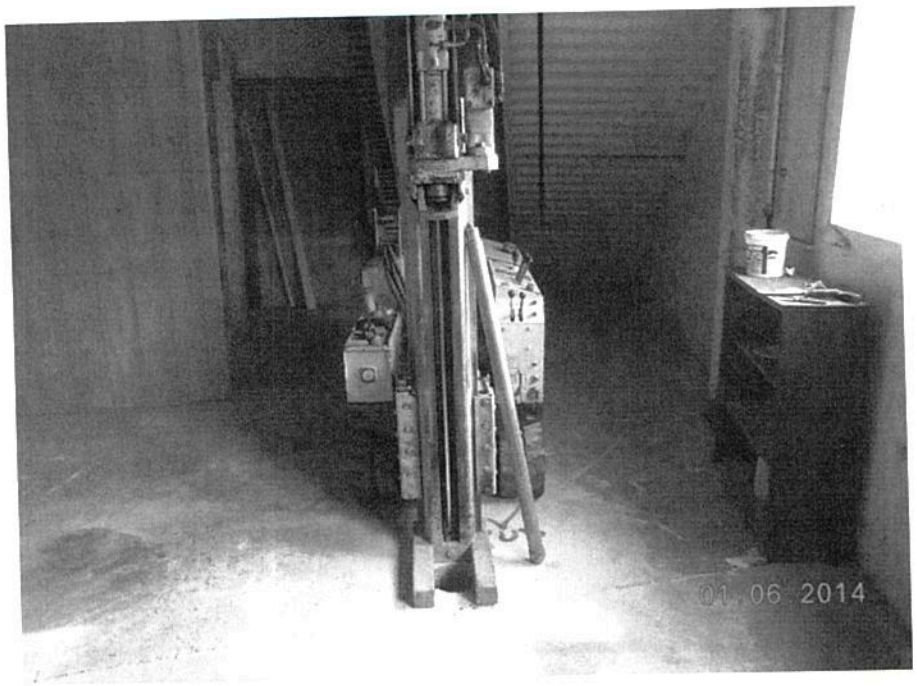


PHOTO 32:

Geoprobe set up to begin drilling for well TW-19.

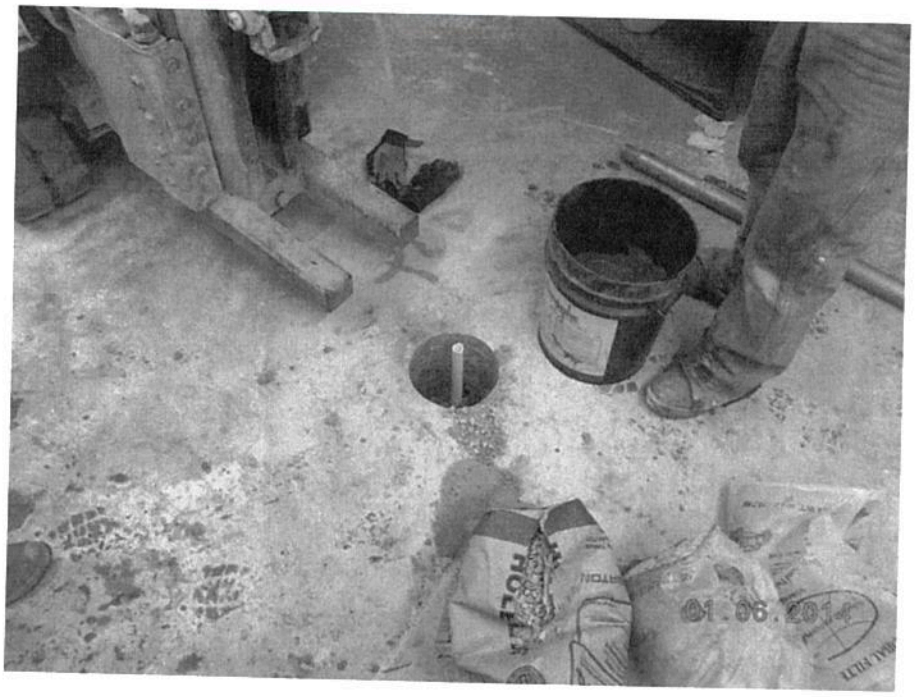


PHOTO 33:

Installation of TW-19 after placement of PVC, filter sand, and bentonite.

PHOTO 34:

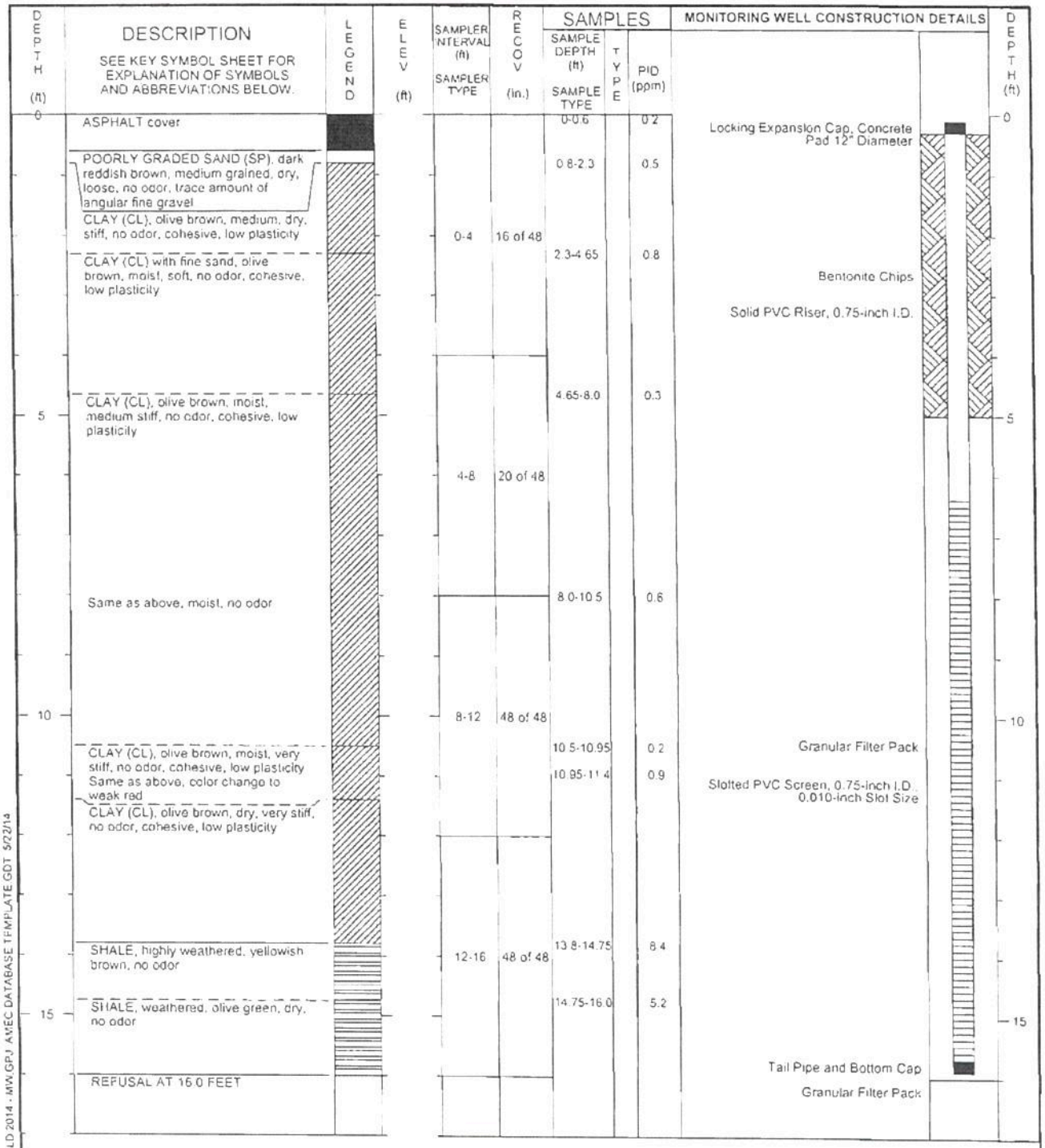
Geoprobe set up for installation of well TW-18.

PHOTO 35:

AST representatives using auger attachment to deepen BOS 100 injection points in Zone 1B.

APPENDIX C

Soil Boring and Well Logs



AMEC SBGP WPID & WELL LITCHFIELD 2014 - MW.GPJ AMEC DATABASE TEMPLATE.GDT 5/22/14

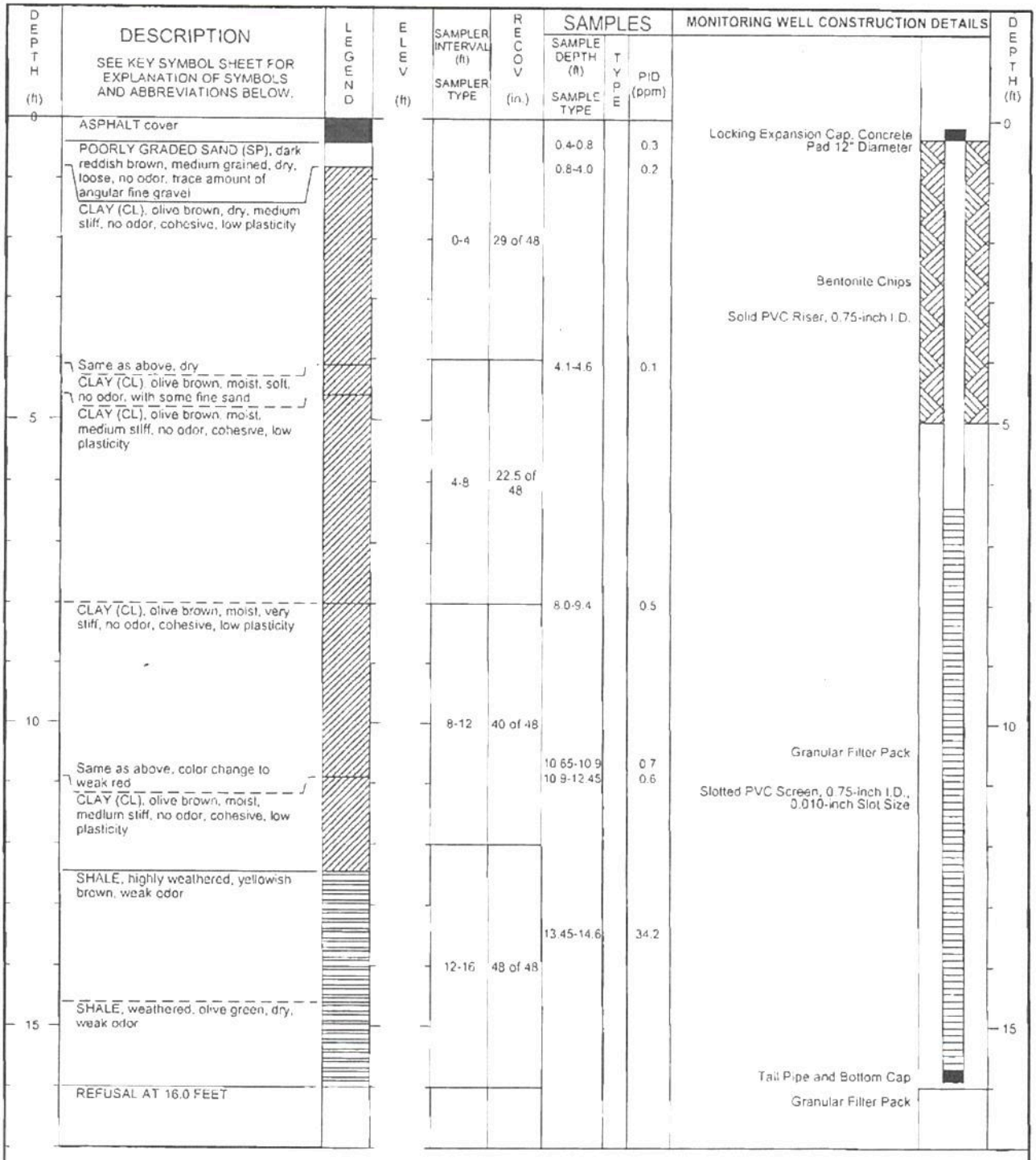
START DATE: 12/10/2013
CONTRACTOR: AST
DRILLER: Ben Borth/Ted Koen
EQUIPMENT: 7822DT
METHOD: Geoprobe Direct Push
BORING SIZE 2"
WELL:
GEOPROBE PUSH LENGTH:
REMARKS: AKGWA-8006-8418

Prepared By: CSRP
Logged By: Kevin Miller

SOIL BORING / MONITORING WELL RECORD

Project: ROBERT BOSCH TOOL CORPORATION
Project No: 6251-12-1002
Checked By: SD **Boring No: TW-16**

amec



AMEC SBGP WPID & WELL LIETCHFIELD 2014 - MW.GPJ AMEC DATABASE TEMPLATE.GDT 5/22/14

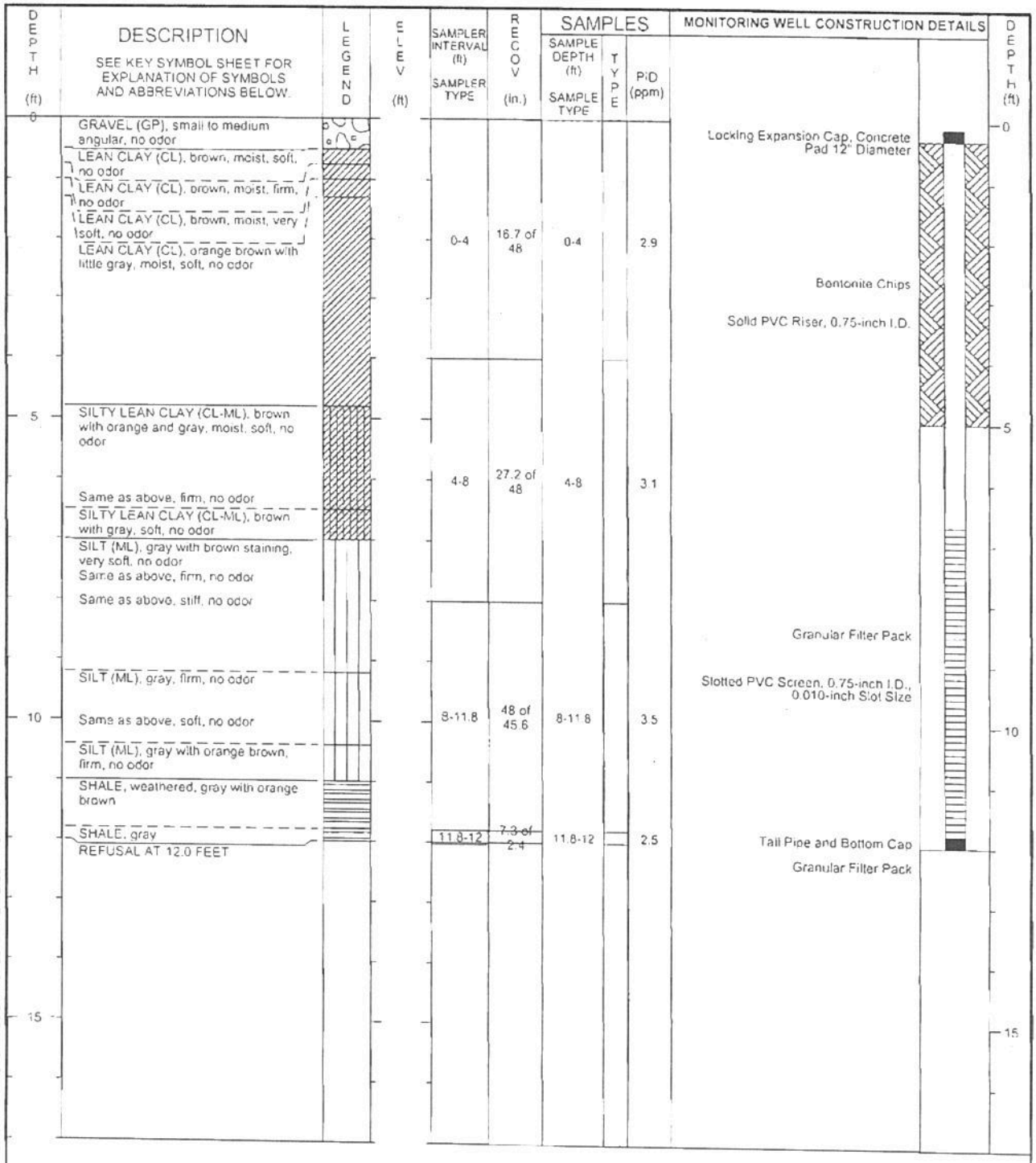
START DATE: 12/10/2013
CONTRACTOR: AST
DRILLER: Ben Borth/Ted Keen
EQUIPMENT: 7822DT
METHOD: Geoprobe Direct Push
BORING SIZE: 2"
WELL:
GEOPROBE PUSH LENGTH:
REMARKS: AKGWA-8006-8417

Prepared By: CSRP
Logged By: Kevin Miller

SOIL BORING / MONITORING WELL RECORD

Project: ROBERT BOSCH TOOL CORPORATION
Project No: 6251-12-1002
Checked By: SD Boring No: TW-17

amec



AMEC SB/GP WPID & WELL LIETCHFIELD 2014 - MW.GPJ AMEC DATABASE TEMPLATE.GDT 6/24/14

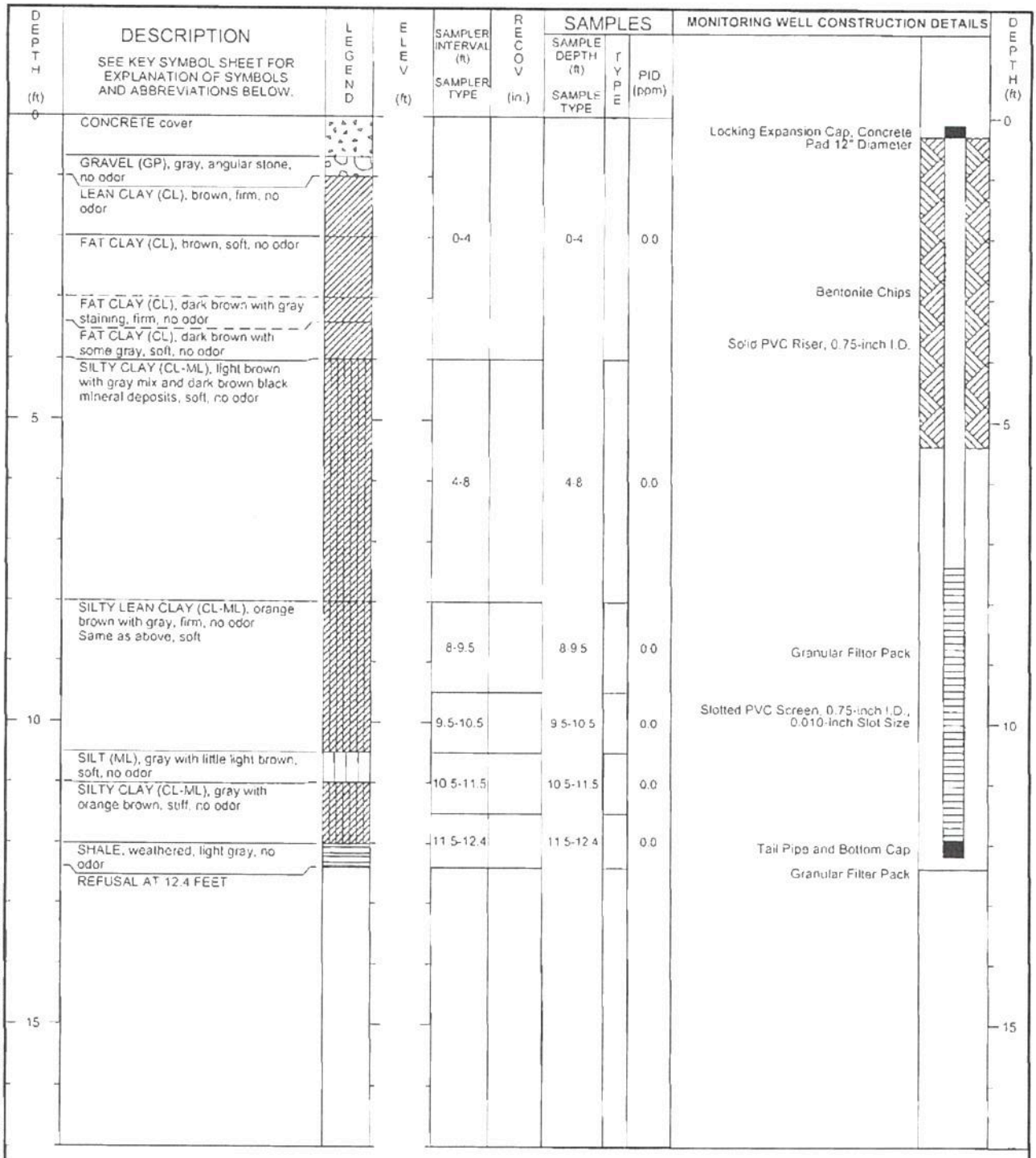
START DATE: 1/7/2014
CONTRACTOR: AST
DRILLER: Ben Borth/Brandon
EQUIPMENT: 54LT
METHOD: Geoprobe Direct Push
BORING SIZE: 2"
WELL:
GEOPROBE PUSH LENGTH:
REMARKS: AKGWA-8002-3162

Prepared By: CSRP
Logged By: Jacob Morris

SOIL BORING / MONITORING WELL RECORD

Project: ROBERT BOSCH TOOL CORPORATION
Project No: 6251-12-1002
Checked By: SD **Boring No: TW-18**

amec



START DATE: 1/7/2014
CONTRACTOR: AST
DRILLER: Ben Borth/Brandon
EQUIPMENT: 54LT
METHOD: Geoprobe Direct Push
BORING SIZE: 2"
WELL:
GEOPROBE PUSH LENGTH:
REMARKS: AKGWA-8002-3163

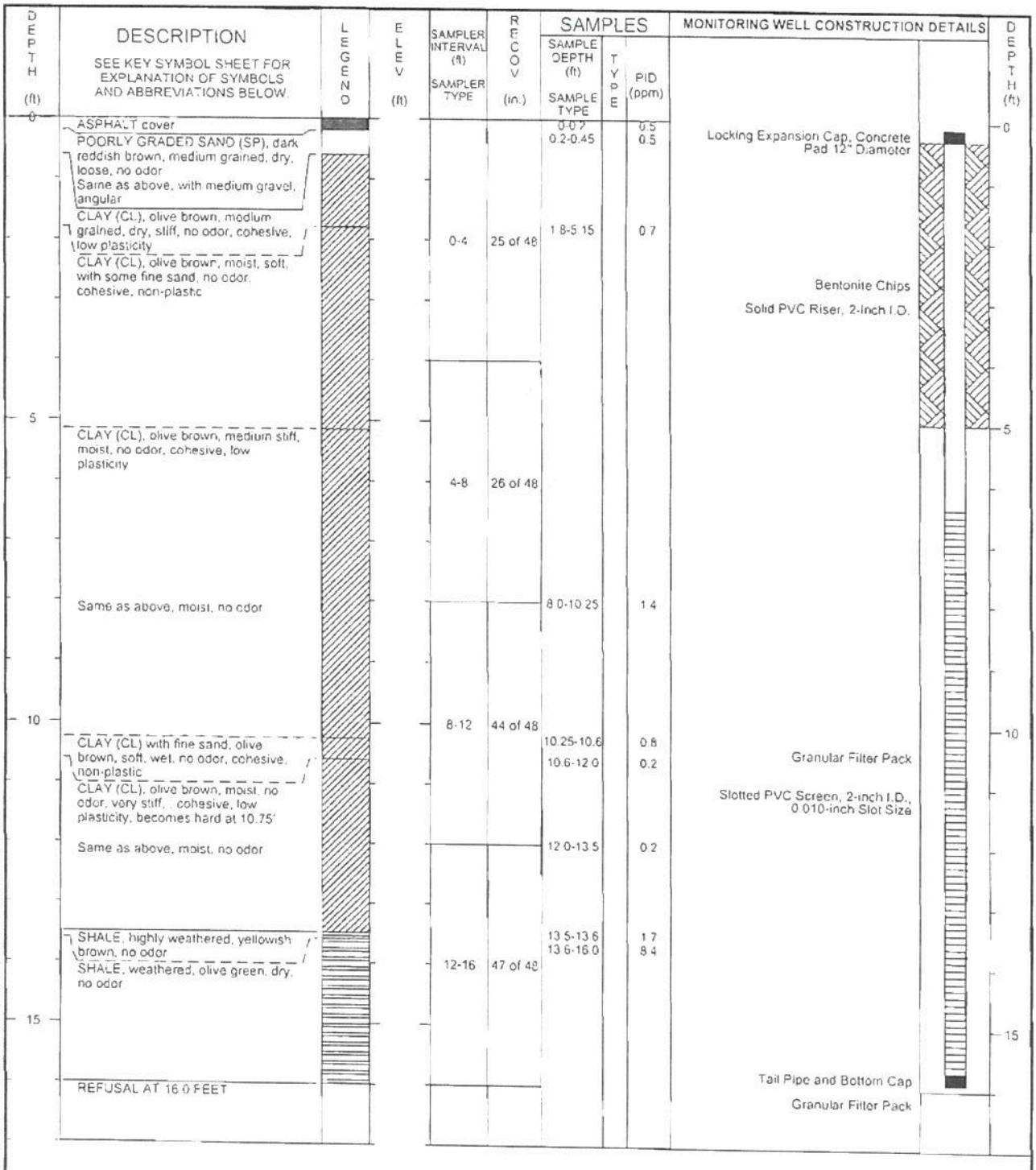
Prepared By: CSRP
Logged By: Jacob Morris

SOIL BORING / MONITORING WELL RECORD

Project: ROBERT BOSCH TOOL CORPORATION
Project No: 6251-12-1002
Checked By: SD Boring No: TW-19

amec

AMEC SB/GP WPID & WELL LIETCHFIELD 2014 - MW.GPJ AMEC DATABASE TEMPLATE.GDT 5/2/14



AMEC SB/GP W/PID & WELL LIETCHFIELD 2014 - MW.GPJ AMEC DATABASE TEMPLATE.GDT 5/22/14

START DATE: 12/10/2013
CONTRACTOR: AST
DRILLER: Ben Borth/Ted Keen
EQUIPMENT: 7822DT
METHOD: Geoprobe Direct Push
BORING SIZE: 2"
WELL:
GEOPROBE PUSH LENGTH:
REMARKS: AKGWA-8006-8416

Prepared By: CSRP
Logged By: Kevin Miller

SOIL BORING / MONITORING WELL RECORD

Project: ROBERT BOSCH TOOL CORPORATION
Project No: 6251-12-1002
Checked By: SD **Boring No: MW-32**

amec

DEPTH (ft)	DESCRIPTION SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW.	LEGEND	ELEV (ft)	SAMPLE INTERVAL (ft) / SAMPLE TYPE	RECOV (in.)	SAMPLES: SAMPLE DEPTH (ft) / SAMPLE TYPE	SAMPLES: TYPE	SAMPLES: PID (ppm)	REMARKS Note: No information on the borings should be used without considering the entire content of the main document
0	No recovery								
5									
10									
	BORING TERMINATED AT 12.0 FEET								
15									

START DATE: 1/7/2014
CONTRACTOR: AST
DRILLER: Ben Borth/Brandon
EQUIPMENT: 54LT
METHOD: Geoprobe Direct Push
HOLE DIA.: 2"
GEOPROBE PUSH LENGTH:
REMARKS:

Prepared By: CSRP
Logged By: Jacob Morris

SOIL BORING RECORD

Project: ROBERT BOSCH TOOL CORPORATION
Project No: 6251-12-1002
Checked By: SD **Boring No: TW-18A**

amec

AMEC ENV SOIL BORING WITH PID LIETCHFIELD 2014 - NO MW.GPJ AMEC DATABASE TEMPLATE.GDT 6/24/14

DEPTH (ft)	DESCRIPTION SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW.	LEGEND	ELEV (ft)	SAMPLES: SAMPLE INTERVAL (ft) / SAMPLE TYPE	RECOV (in.)	SAMPLES: SAMPLE DEPTH (ft) / SAMPLE TYPE	SAMPLES: TYPE	SAMPLES: PID (ppm)	REMARKS Note: No information on the borings should be used without considering the entire content of the main document
0	GRAVEL (GP) with clay, brown, medium grained, very moist, no odor SAND (SP), brown, fine grained, wet, no odor			0-4	3.6 of 48	0-4		0.7	
5				4-8	8.3 of 48	4-8		0.4	
	CLAY (CL), brown, wet, no odor CLAY (CL) with silt, brown, wet, no odor			8-12	20.3 of 48	8-12		0.6	
10	CLAY (CL), brown, soft, wet, no odor SILTY CLAY (CL-ML), brown, wet, no odor, medium angular stone								
	NO RECOVERY			12-12.8	0 of 9.6	12-12.8		0.6	
	REFUSAL AT 12.8 FEET								
15									

START DATE: 1/7/2014
CONTRACTOR: AST
DRILLER: Ben Borth/Brandon
EQUIPMENT: S4LT
METHOD: Geoprobe Direct Push
HOLE DIA.: 2"
GEOPROBE PUSH LENGTH:
REMARKS:

Prepared By: CSRP
Logged By: Jacob Morris

SOIL BORING RECORD

Project: ROBERT BOSCH TOOL CORPORATION
Project No: 6251-12-1002
Checked By: SD **Boring No: TW-18B**

amec

AMEC ENV SOIL BORING WITH PID LETCHFIELD 2014 - NO MW GPJ AMEC DATABASE TEMPLATE GDT 6/24/14

PHOTO 21:

Same. Daylighting between grassy area and concrete pad.

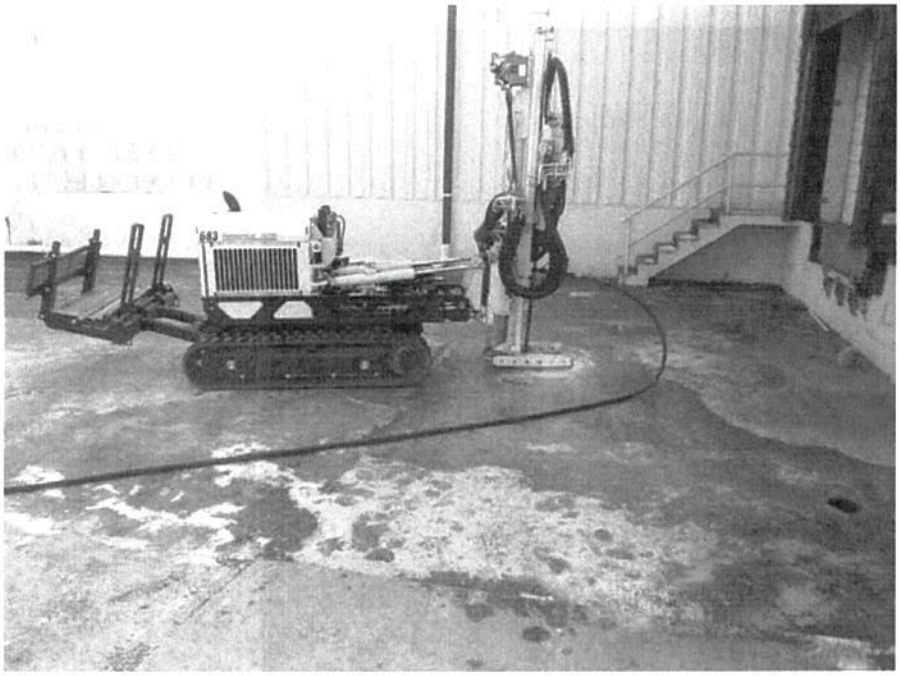


PHOTO 22:

3DMe injection near MW-5 and MW-5M.

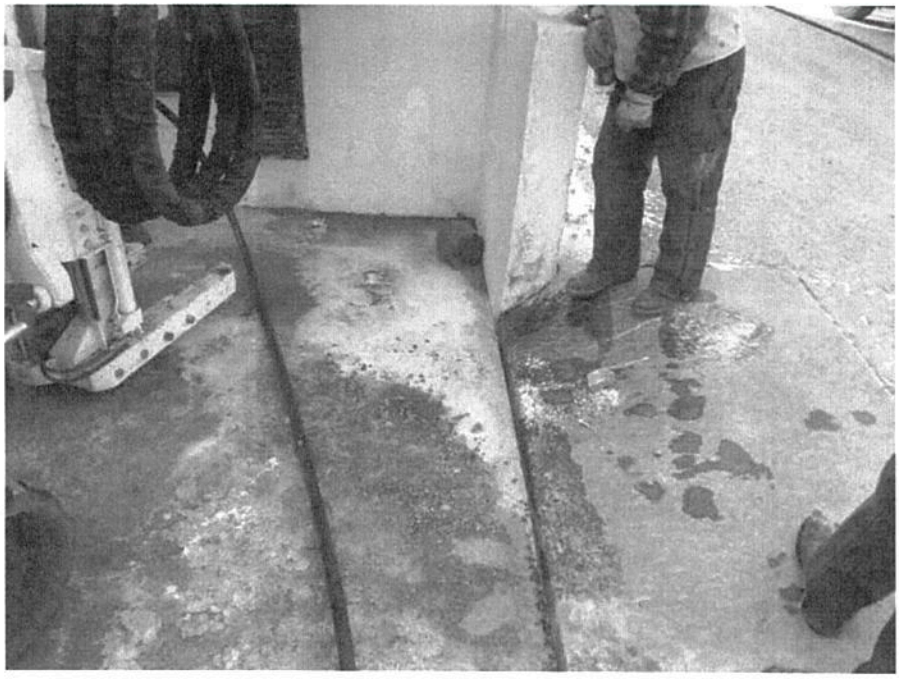


PHOTO 23:

Same. Daylighting seen between concrete ramp and loading dock.

PHOTO 24:

Newly installed permanent injection points F35P and F36P near west gate.

PHOTO 25:

AST representatives hydrating BOS 100 drums to displace nitrogen and never contact with air.

PHOTO 26:

Preparing to inject BOS 100 using Geoprobe 7822DT rig in Zone 7.

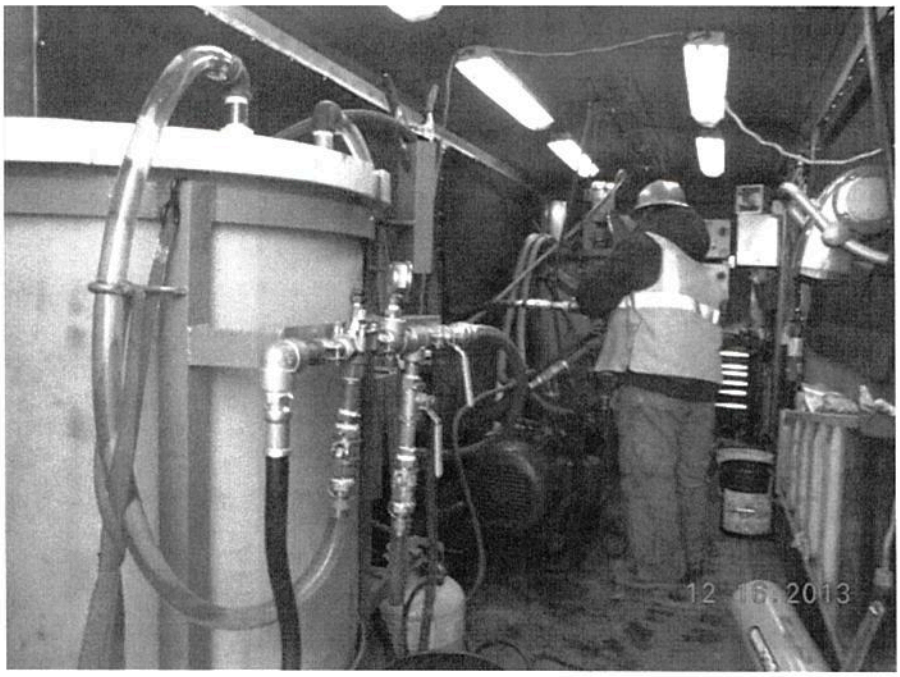


PHOTO 27:

AST representative mixing batch of BOS 100. Water tank in foreground.

PHOTO 28:

Setting up to inject BOS 100 in Zone 7 (Pit G).

PHOTO 29:

Geoprobe using direct push to reach depth necessary for injecting BOS 100 below backfilled WWTR pit.

PHOTO 30:

Injecting BOS 100 in Zone 7 (Pit E).

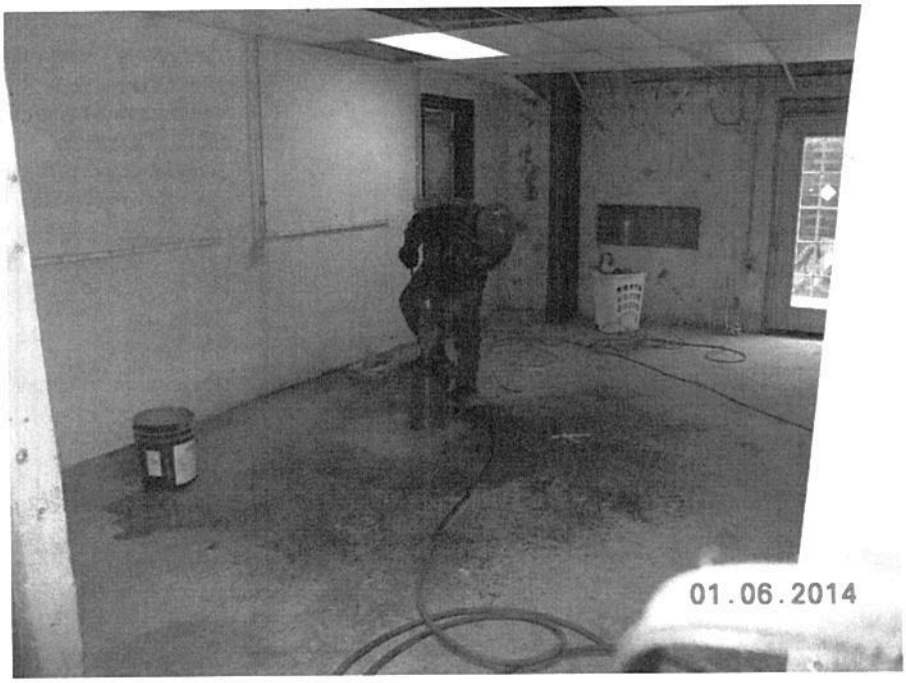


PHOTO 31:

Concrete coring for installation of borings TW-18A and TW-18B.

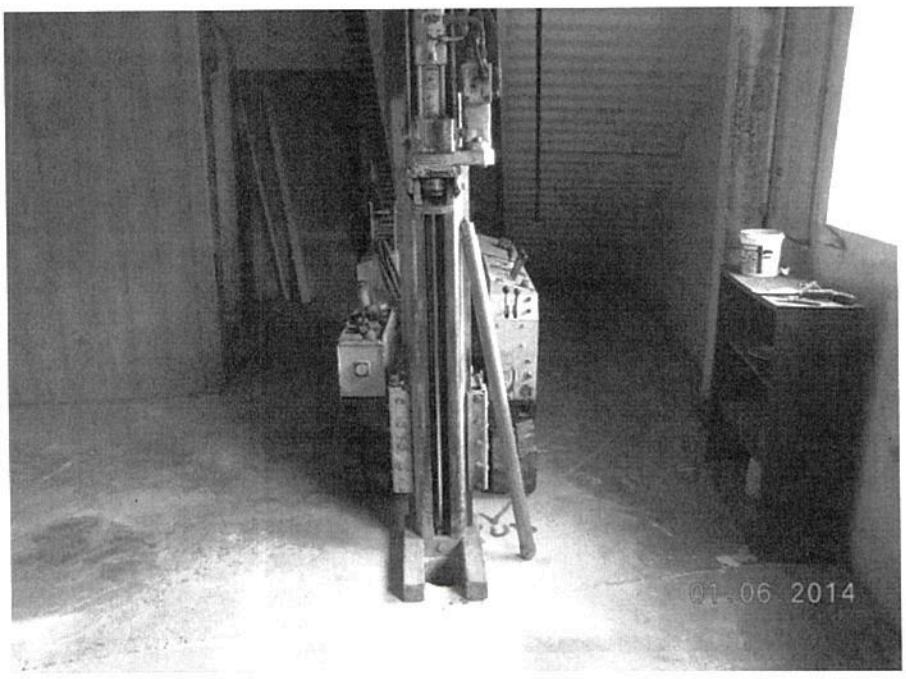


PHOTO 32:

Geoprobe set up to begin drilling for well TW-19.

PHOTO 33:

Installation of TW-19 after placement of PVC, filter sand, and bentonite.

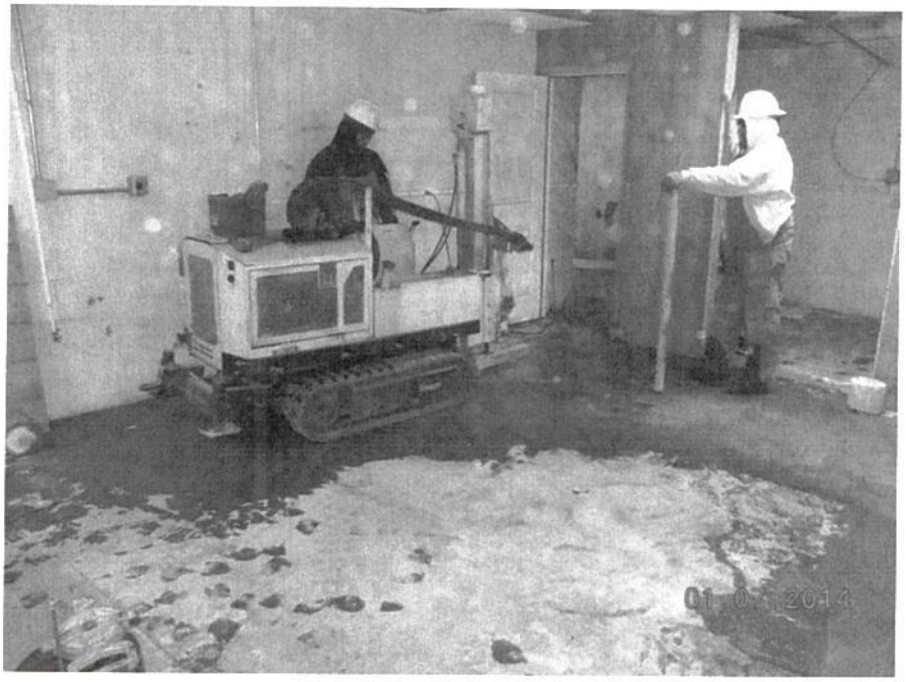


PHOTO 34:

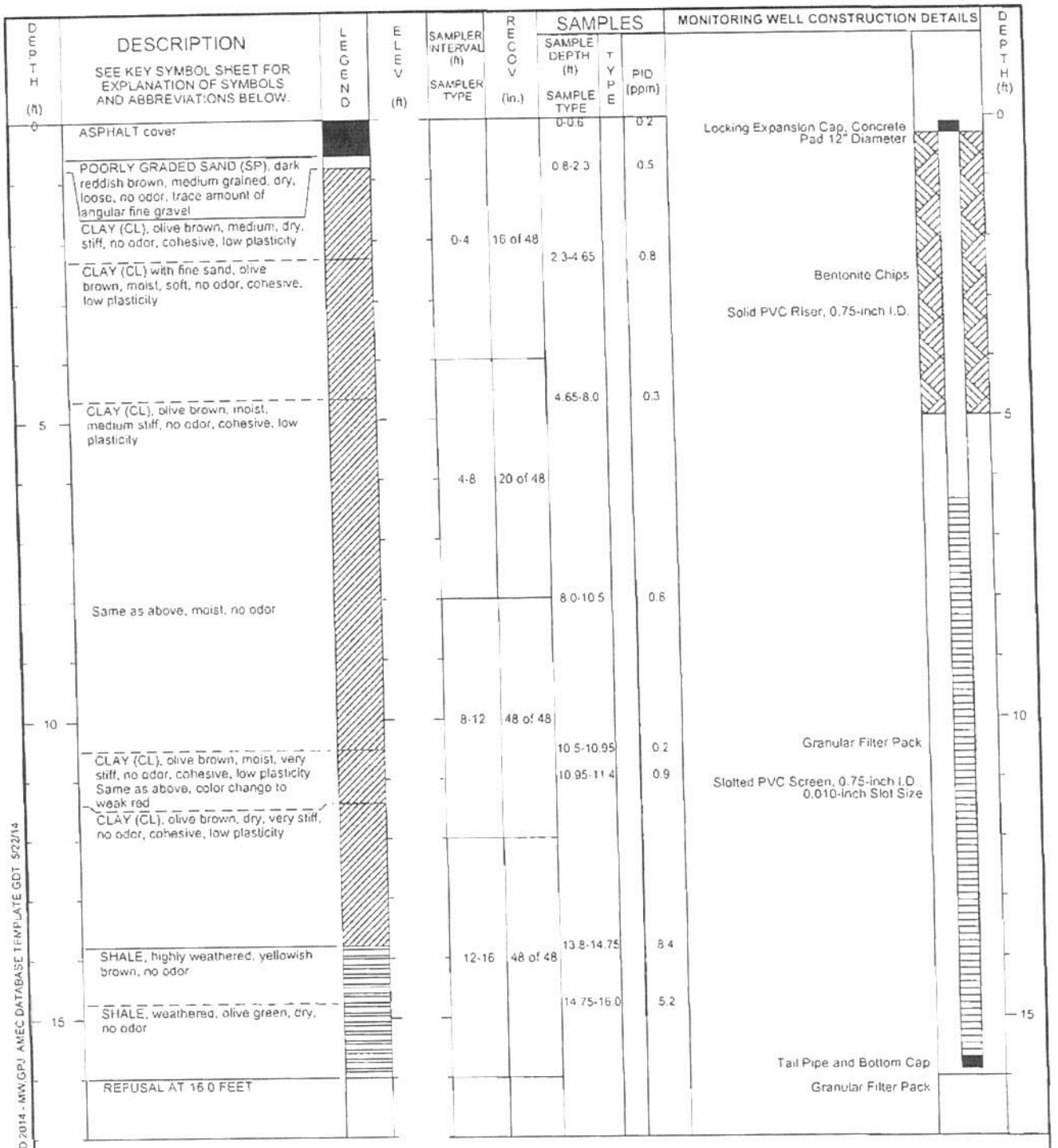
Geoprobe set up for installation of well TW-18.

PHOTO 35:

AST representatives using auger attachment to deepen BOS 100 injection points in Zone 1B.

APPENDIX C

Soil Boring and Well Logs



AMEC SB/GP WPID & WELL LITCHFIELD 2014 - MW.GPJ AMEC DATABASE TEMPLATE.GDT 5/22/14

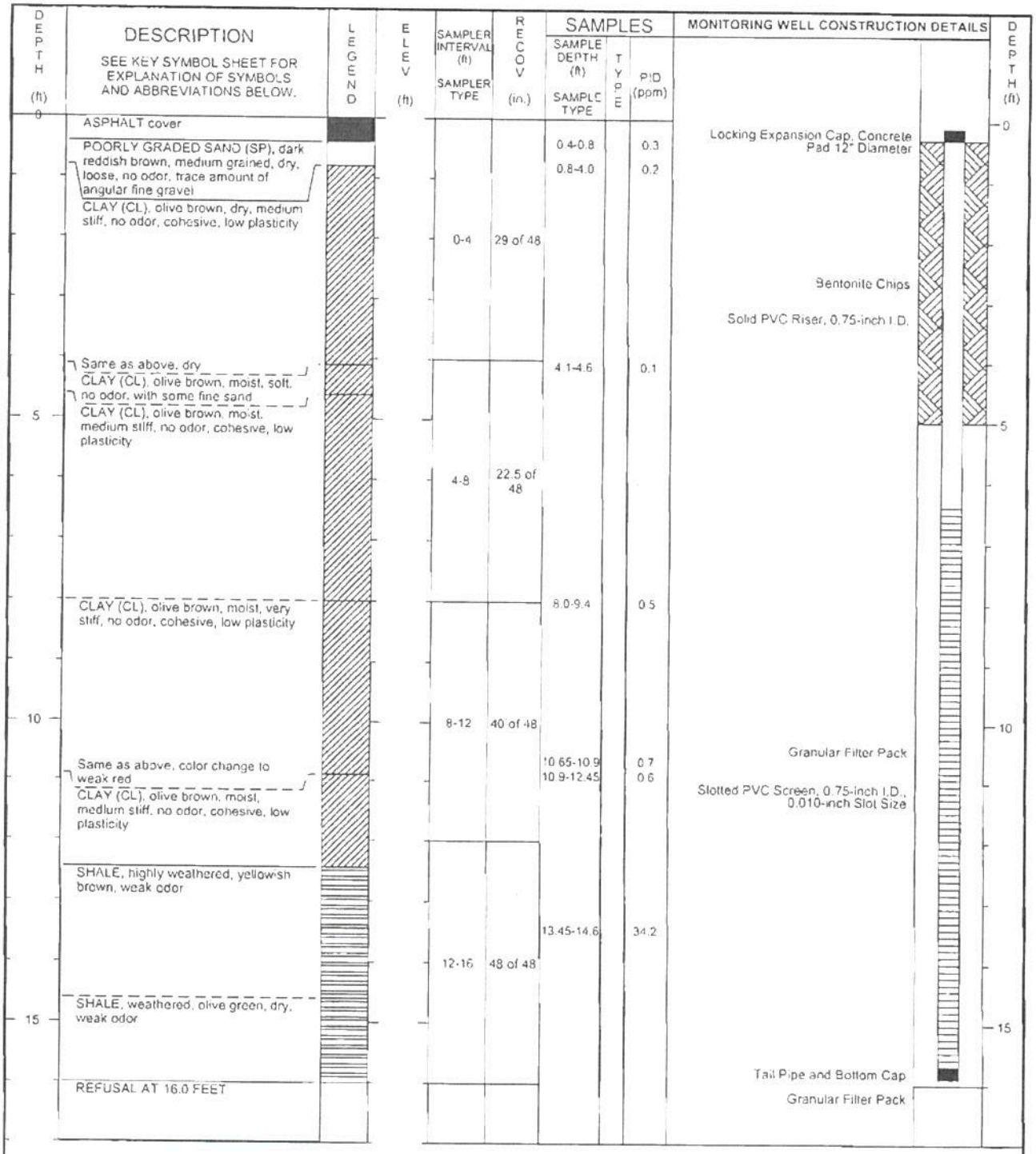
START DATE: 12/10/2013
CONTRACTOR: AST
DRILLER: Ben Borth/Ted Koon
EQUIPMENT: 7822DT
METHOD: Geoprobe Direct Push
BORING SIZE: 2"
WELL:
GEOPROBE PUSH LENGTH:
REMARKS: AKGWA-8006-8418

Prepared By: CSRP
Logged By: Kevin Miller

SOIL BORING / MONITORING WELL RECORD

Project: ROBERT BOSCH TOOL CORPORATION
Project No: 6251-12-1002
Checked By: SD **Boring No: TW-16**

amec



AMEC SB/GP W/PID & WELL LIETCHFIELD 2014 - MW.GPJ AMEC DATABASE TEMPLATE.GDT 5/22/14

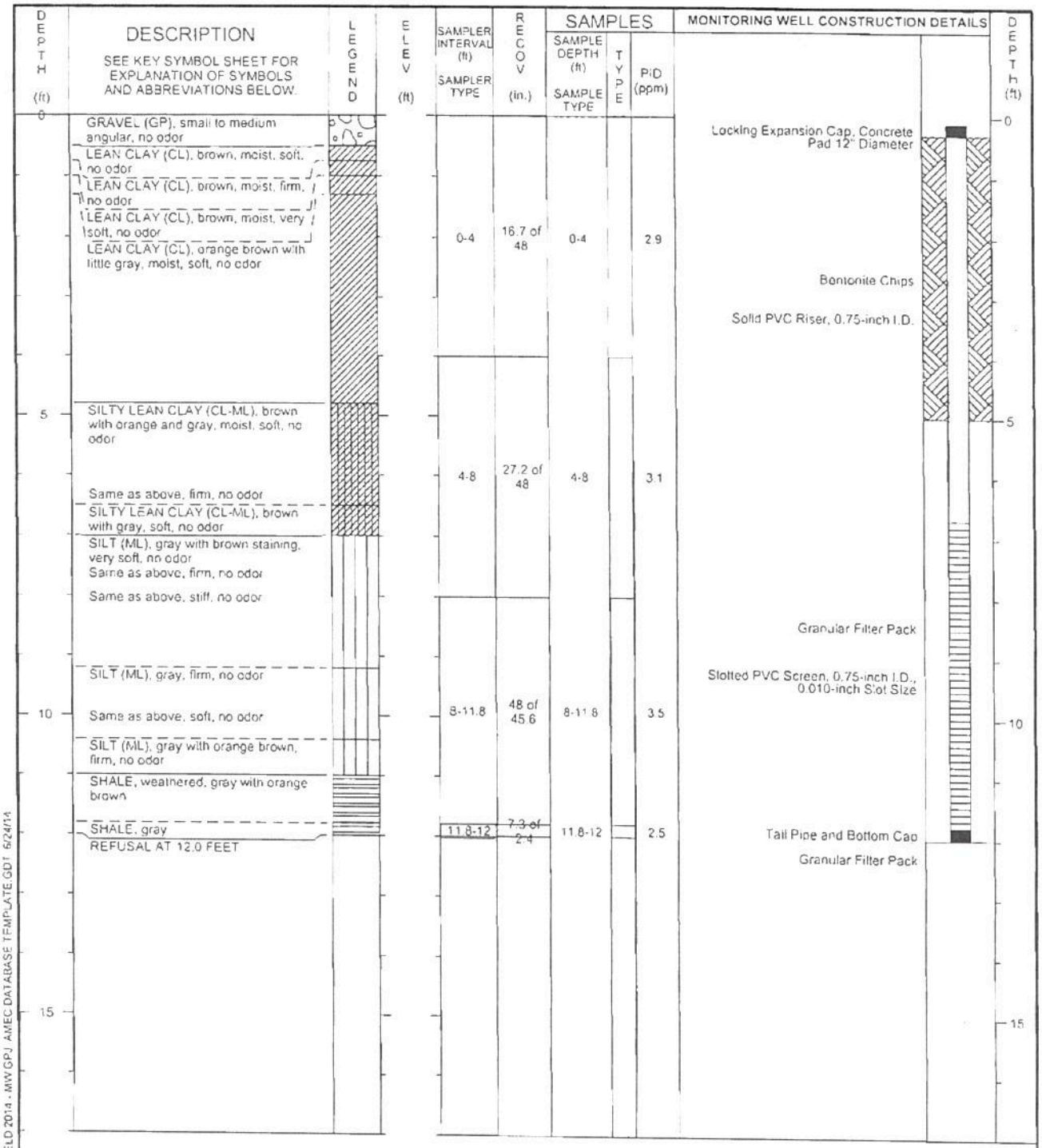
START DATE: 12/10/2013
CONTRACTOR: AST
DRILLER: Ben Borth/Ted Keen
EQUIPMENT: 7822DT
METHOD: Geoprobe Direct Push
BORING SIZE: 2"
WELL:
GEOPROBE PUSH LENGTH:
REMARKS: AKGWA-8006-8417

Prepared By: CSRP
Logged By: Kevin Miller

SOIL BORING / MONITORING WELL RECORD

Project: ROBERT BOSCH TOOL CORPORATION
Project No: 6251-12-1002
Checked By: SD Boring No: TW-17

amec



AMEC SB/GP WPID & WELL LIETCHFIELD 2014 - MW GPJ AMEC DATABASE TEMPLATE.GDT 6/24/14

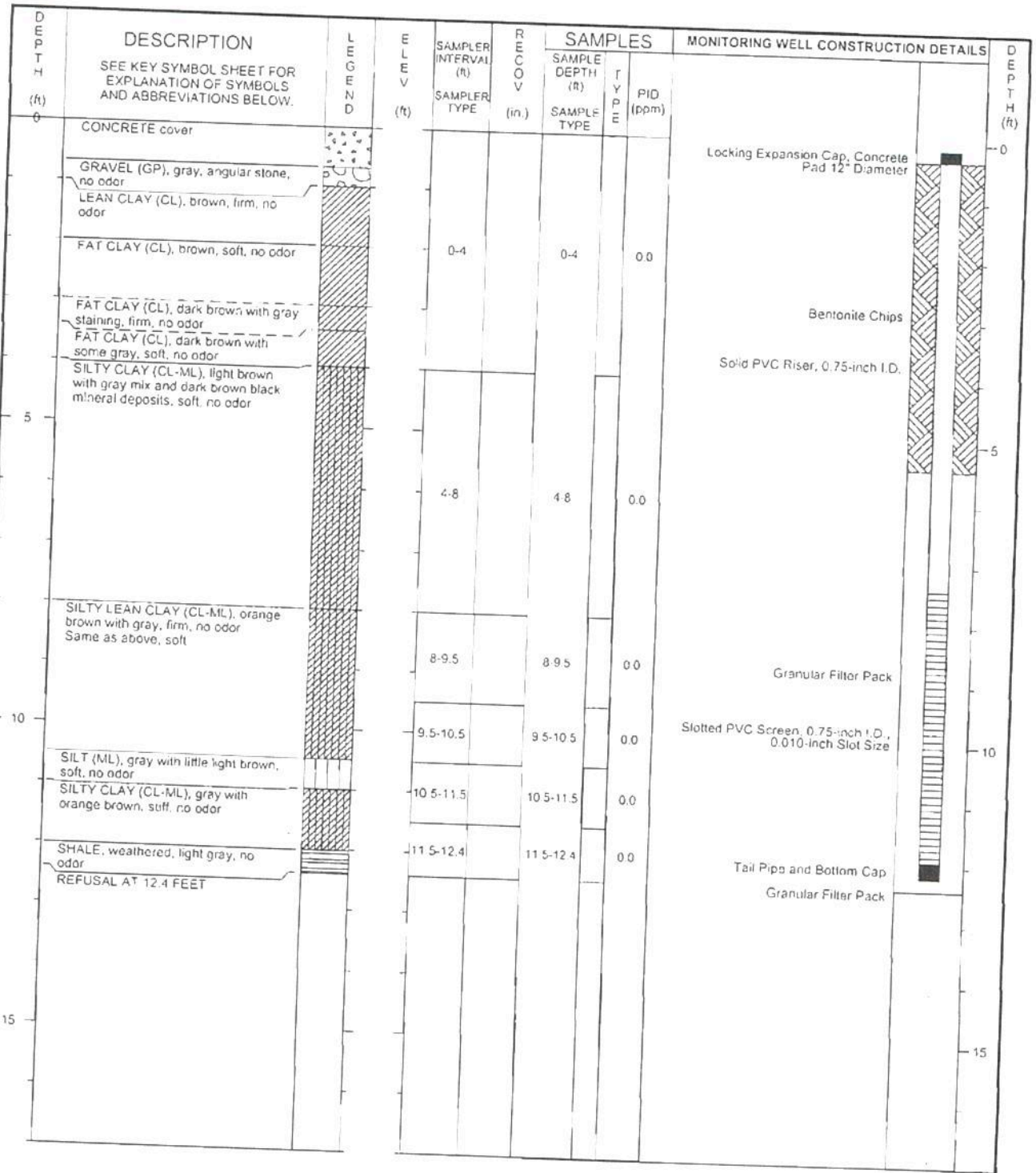
START DATE: 1/7/2014
CONTRACTOR: AST
DRILLER: Ben Borth/Brandon
EQUIPMENT: 54LT
METHOD: Geoprobe Direct Push
BORING SIZE: 2"
WELL:
GEOPROBE PUSH LENGTH:
REMARKS: AKGWA-8002-3162

Prepared By: CSRP
Logged By: Jacob Morris

SOIL BORING / MONITORING WELL RECORD

Project: ROBERT BOSCH TOOL CORPORATION
Project No: 6251-12-1002
Checked By: SD **Boring No: TW-18**

amec



AMEC SB/GP WPID & WELL LIETCHFIELD 2014 - MW.GPJ AMEC DATABASE TEMPLATE.GDT 5/22/14

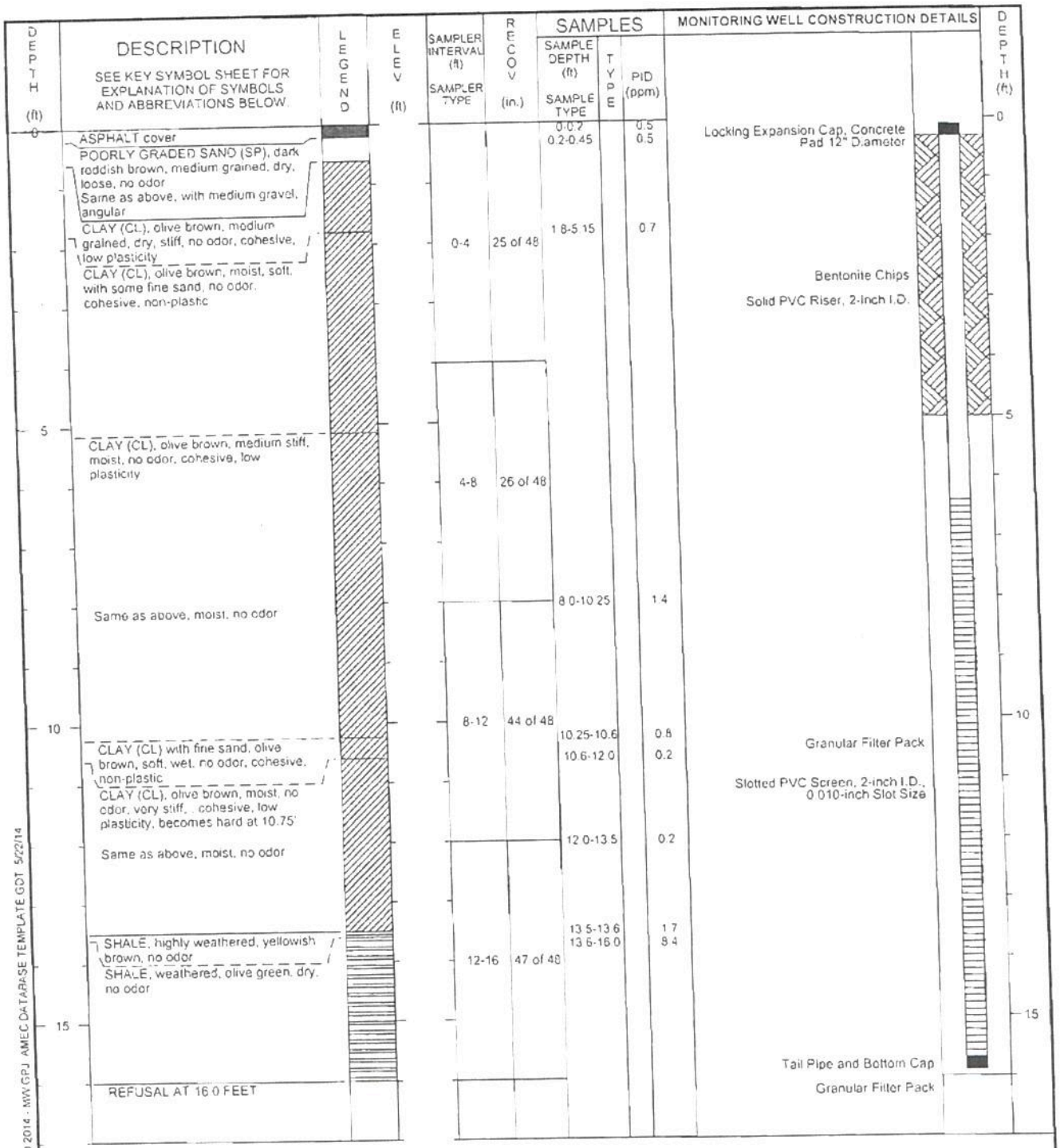
START DATE: 1/7/2014
CONTRACTOR: AST
DRILLER: Ben Borth/Brandon
EQUIPMENT: 54LT
METHOD: Geoprobe Direct Push
BORING SIZE: 2"
WELL:
GEOPROBE PUSH LENGTH:
REMARKS: AKGWA-8002-3163

Prepared By: CSRP
Logged By: Jacob Morris

SOIL BORING / MONITORING WELL RECORD

Project: ROBERT BOSCH TOOL CORPORATION
Project No: 6251-12-1002
Checked By: SD Boring No: TW-19

amec



AMEC SB/GP W/PID & WELL LIETCHFIELD 2014 - MW.GPJ AMEC DATABASE TEMPLATE.GDT 5/22/14

START DATE: 12/10/2013
CONTRACTOR: AST
DRILLER: Ben Borth/Ted Keen
EQUIPMENT: 7822DT
METHOD: Geoprobe Direct Push
BORING SIZE: 2"
WELL:
GEOPROBE PUSH LENGTH:
REMARKS: AKGWA-8006-8416

Prepared By: CSRP
Logged By: Kevin Miller

SOIL BORING / MONITORING WELL RECORD

Project: ROBERT BOSCH TOOL CORPORATION
Project No: 6251-12-1002
Checked By: SD Boring No: MW-32

amec

DEPTH (ft)	DESCRIPTION SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW.	LEGEND	ELEV (ft)	SAMPLES: SAMPLE INTERVAL (ft) / SAMPLE TYPE	RECOV (in.)	SAMPLES: SAMPLE DEPTH (ft) / SAMPLE TYPE	SAMPLES: TYPE	SAMPLES: PID (ppm)	REMARKS Note: No information on the borings should be used without considering the entire content of the main document.
0	No recovery								
5									
10	BORING TERMINATED AT 12.0 FEET								
15									

START DATE: 1/7/2014
CONTRACTOR: AST
DRILLER: Ben Borth/Brandon
EQUIPMENT: 54LT
METHOD: Geoprobe Direct Push
HOLE DIA.: 2"
GEOPROBE PUSH LENGTH:
REMARKS:

Prepared By: CSRP
Logged By: Jacob Morris

SOIL BORING RECORD

Project: ROBERT BOSCH TOOL CORPORATION
Project No: 6251-12-1002
Checked By SD **Boring No: TW-18A**

amec

AMEC ENV SOIL BORING WITH PID LIETCHFIELD 2014 - NO MW.GPJ AMEC DATABASE TEMPLATE.GDT 6/24/14

DEPTH (ft)	DESCRIPTION SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW.	LEGEND	ELEV (ft)	SAMPLE INTERVAL (ft) SAMPLE TYPE	RECOV (in.)	SAMPLES: SAMPLE DEPTH (ft) SAMPLE TYPE	SAMPLES: TYPE	SAMPLES: PID (ppm)	REMARKS Note: *No information on the borings should be used without considering the entire content of the main document*
0	GRAVEL (GP) with clay, brown, medium grained, very moist, no odor SAND (SP), brown, fine grained, wet, no odor			0-4	3.6 of 48	0-4		0.7	
5				4-8	8.3 of 48	4-8		0.4	
	CLAY (CL), brown, wet, no odor CLAY (CL) with silt, brown, wet, no odor			8-12	20.3 of 48	8-12		0.6	
10	CLAY (CL), brown, soft, wet, no odor SILTY CLAY (CL-ML), brown, wet, no odor, medium angular stone NO RECOVERY			12-12.8	0 of 9.6	12-12.8		0.6	
	REFUSAL AT 12.8 FEET								
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AMEC ENV SOIL BORING WITH PID LIETCHFIELD 2014 - NO MW GPJ AMEC DATABASE TEMPLATE GDT 6/24/14

START DATE: 1/7/2014
CONTRACTOR: AST
DRILLER: Ben Borth/Brandon
EQUIPMENT: 54LT
METHOD: Geoprobe Direct Push
HOLE DIA.: 2"
GEOPROBE PUSH LENGTH:
REMARKS:

Prepared By: CSRP
Logged By: Jacob Morris

SOIL BORING RECORD

Project: ROBERT BOSCH TOOL CORPORATION
Project No: 6251-12-1002
Checked By: SD **Boring No: TW-18B**

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